

3·2·1·Contact[®]

Can You Do This Maze?

Follow the red roadway
to the door of the
Astro Inn.

(Hint: Only one of the three
space-docks gets you there!)



Also:

- Secret Messages
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Pineapple

Fatt Heads



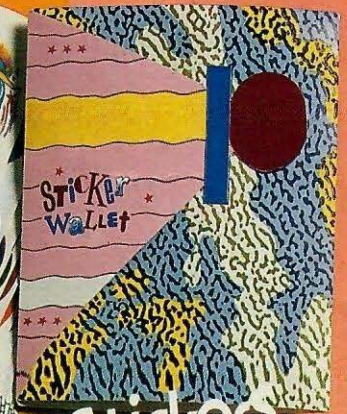
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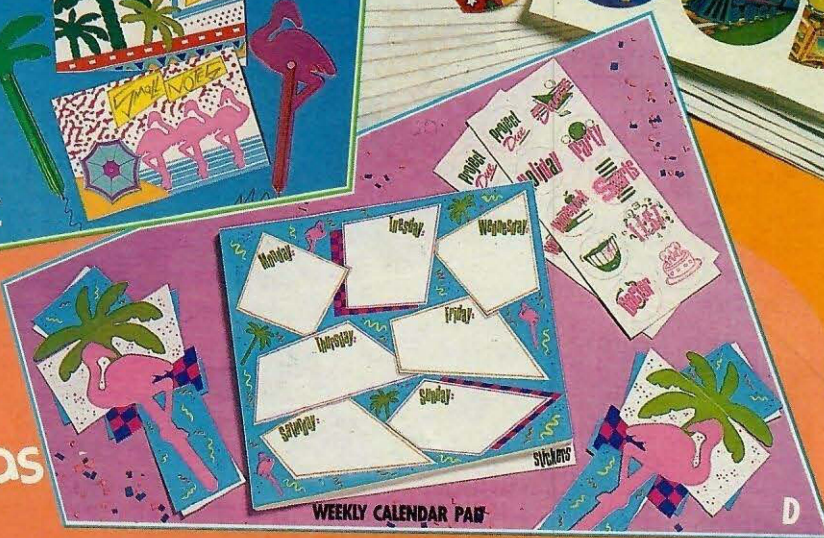
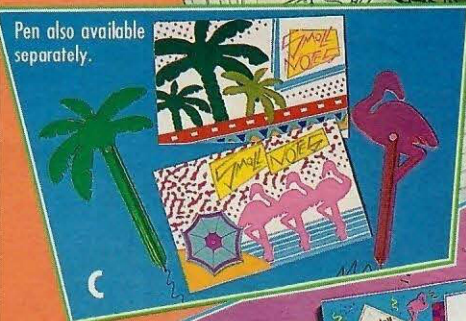
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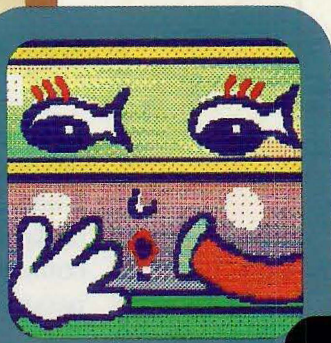


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General Excellence



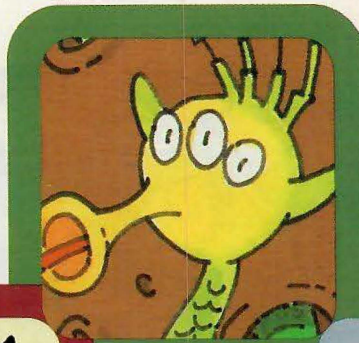
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Cover Illustration © Brad Hamann



ILLUSTRATION BY RON LIPKING

Hop to It!

Why did the toad cross the road? To get to the other side, of course. Unfortunately, lots of toads, crossing at night, don't make it to the other side of country roads. They get hit by passing cars.



COURTESY FAUNA AND FLORA PRESERVATION SOCIETY

Hot and Cold Clothes

You know how it is: It's cool in the morning so you wear warm clothes. By afternoon it's hot and you're sweltering. Or the weather starts out warm, but by evening it's cool—and you're freezing.

Soon there may be clothes that keep you cool when it's hot and warm when it's cold. Scientists at the U.S. Department of Agriculture are testing chemicals that weather-proof cotton fabric. The treated fabric stores heat as the temperature rises, then releases the stored-up heat when the temperature drops.

The fabric would be perfect for hikers and people who work outdoors. It could be sewn into drapes and carpets to keep room temperatures pleasant. It could even be used to insulate buildings.

The problem is: the stuff hasn't been perfected yet. For one thing, scientists need to study how well it will stand up to sun, rain, snow and washing machines. But they're um, *clothing* in on the solutions. Look for some answers in the near future.

Disk Dive

Soon computer lovers will be able to take a dive—a deep-sea dive, that is—thanks to a new waterproof computer being developed in Australia.

Divers will strap the computer to their backs and the miniature keyboard and display screen to their wrists. Then, 100 meters below, they'll be able to feed the computer data.

Using sonar, or underwater sound signals, the computer will keep track of divers' locations as they swim along beneath the sea. The system will make it easy to map undersea discoveries.



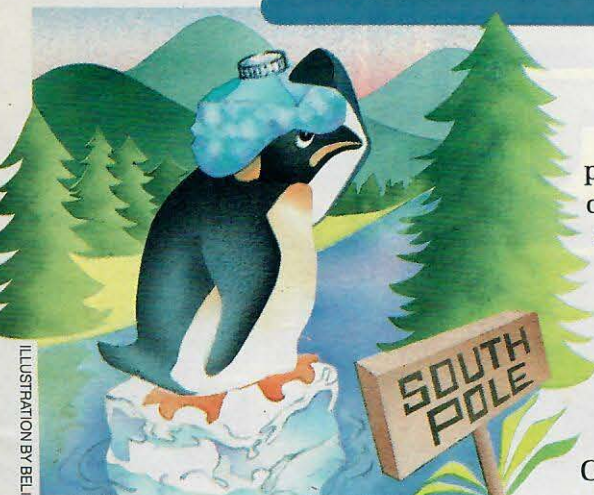
ILLUSTRATION BY MARTIN LEMELMAN

That's why toad lovers in England decided to help toads cross roads. They've built toad crossings near ponds where toads breed.

A toad crossing has three parts. First, there's a clear plastic fence, several inches high, running alongside the road. When toads try to cross, they bump into the fence, turn and walk along the fence until they find an opening.

That's where the second part of the toad crossing comes in—the human part. Toad lovers wait by the opening to scoop toads into pails and carry them across the road.

The third part of a toad crossing is for people, not toads. It's a big road sign to warn drivers that they've come to a toad crossing. Signs stay up through the spring breeding season. And what do you think is in the middle of the sign? A big picture of a little toad.



Polar Melt

The South Pole hasn't always been covered with ice. Explorers have found evidence that Antarctica's climate was once warmer than it is now. They've collected frozen plants, seeds and fossils—all between two and five million years old.

What makes the discoveries so amazing is how "young" they are. Until now, scientists have believed that Antarctica's ice has been frozen solid for 15 million years. The new finds may change their minds. It seems that "only" two million years ago the South Pole was a warmer place, with streams flowing in the cold, cold polar mountains.

Life on Mars—Maybe

Is there life on Mars? Two scientists say the answer is yes. Gilbert Levin and Patricia Straat were among the scientists whose experiments were carried to Mars ten years ago. Since then, they have been studying the photos and information sent back from the red planet—including a number of photos of one rock that were taken several years apart.

The photos show that greenish

patches on the rock changed over time. Dr. Levin and Ms. Straat say the patches could be lichen, a moss-like plant that needs water to grow. The scientists say the water may come from Mars's atmosphere or from under the planet's surface.

Other scientists disagree with

Is there life on the plains of Mars?

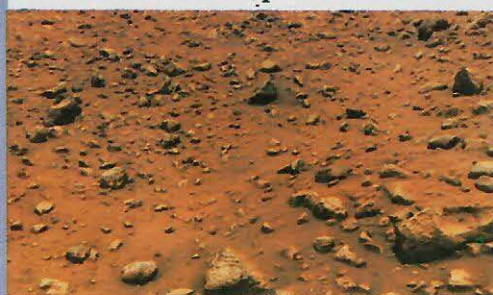


PHOTO COURTESY NASA

Dr. Levin and Ms. Straat. They say that there's almost no chance of life on Mars, and that the greenish patch may not be plant life at all. But all the scientists studying Mars would like to see more missions to study the planet—and the possibilities of life there.

So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science stories from the news that have to do with the future. (Be sure to tell us where you heard the story.) Send to:

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GET LOST!



PHOTO © MINOTAUR DESIGNS

DESIGNING AMAZING MODERN MAZES

by Michael Dayton

Never ask Adrian Fisher for directions. He may steer you toward a dead-end alley. Perhaps he'll point you down a path where you'll circle around and around...and around and around.

That's because Mr. Fisher is paid to get people lost. He works for the only company in the world that designs mazes. Not the mazes you might find in CONTACT. The mazes Mr. Fisher designs are big—big enough to walk through.

Mr. Fisher is helping to bring back the ancient art of maze-making. So far, the English company that he works for, Minotaur Designs, has created and built 15 life-size mazes. Three more are currently being built. Most of his mazes are in England, although Mr. Fisher soon may be build-

ing mazes in the U.S.

Mr. Fisher's job may seem like child's play, but it's serious work. His job requires him to be part scientist and part artist. A good maze requires careful planning and a real understanding of mathematics.

"I studied math in school, and I always loved gardening," Mr. Fisher told CONTACT. "Building mazes is a way to combine those two loves."

Designing Mazes

When it comes to building mazes, a green thumb doesn't hurt. The paths of most of his mazes are outlined by hedges. Mr. Fisher has also designed mazes that use tile, stone, bricks,

Left: Imagine getting lost in your own backyard. All you need is a maze like this.

Right: In the town where the Beatles were born, there's an a-maze-ing yellow submarine.

PHOTO © MINOTAUR DESIGNS



Two kids in a corner—which way should they go?

PHOTO © TIME INC./DISCOVER MAGAZINE

or in one case, parts of a ship. The type of materials used can have a big effect on the price. A hedge maze can cost \$20,000, while using other materials may raise the cost to \$300,000.

According to Mr. Fisher, the ideal maze is built on about a half acre. In that space, the designer must decide how many paths a maze can have. He must decide whether the paths should run clockwise or counterclockwise. Finally, though a maze might contain up to a mile of paths, a person should be able to solve it in an hour or less. Because of all those requirements, a maze can take two or three months to design.

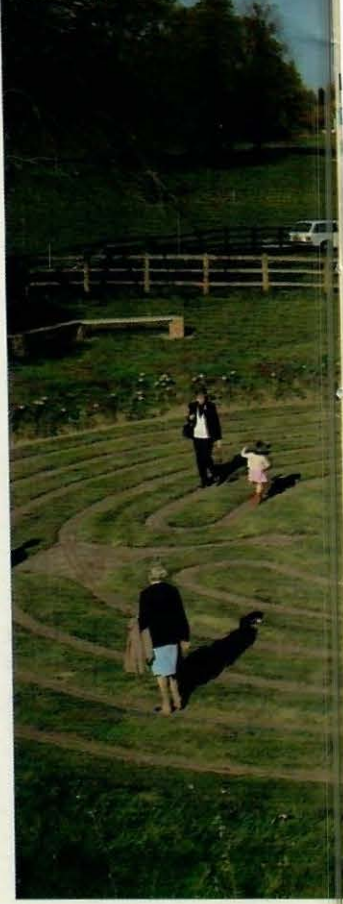
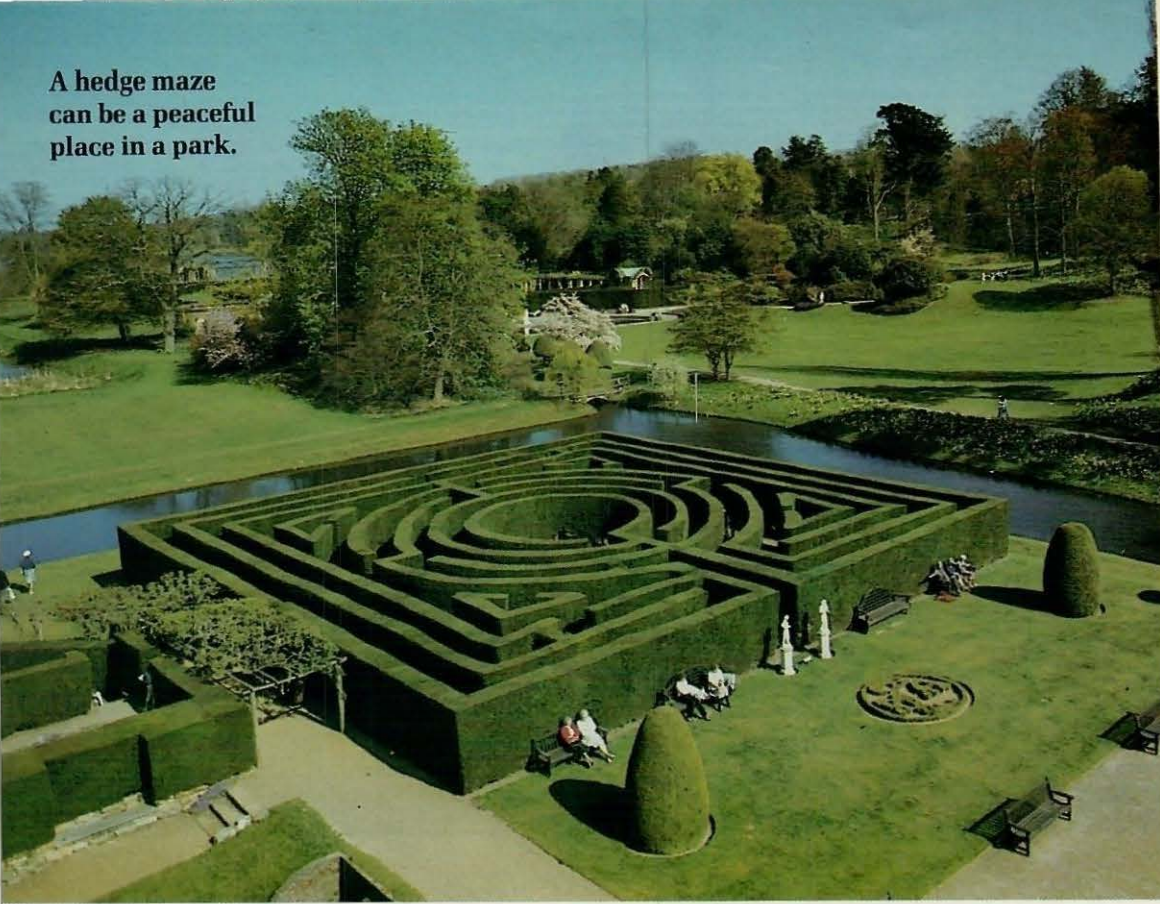
Mazes Over the Years

Maze-making is an unusual craft, but it is not a new one. Hundreds of life-size mazes exist all over the world.

The earliest ones are centuries old and made of stone or tile. One Egyptian maze dates back to 3400 B.C. Scientists disagree about why the first mazes were built. In Egypt and Greece, the twisting paths of a maze may have stood for the trials and troubles faced in life.

The Minotaur, which Mr. Fisher's ➔

A hedge maze
can be a peaceful
place in a park.



company takes its name from, was a mythical beast that lived in a maze in ancient Crete—a part of Greece.

Today, a few mazes are used for scientific purposes and experiments. Some mazes are designed for rats, ants and even earthworms. Scientists want to see if animals choose the correct paths, and how well they remember what they've learned. In many cases, rats do as well as people.

Mr. Fisher enjoys the ancient hedge mazes but

finds their designs too simple. "You can look at the old mazes from the 1200's on, and see how easy they are," Mr. Fisher says. "We try to avoid that by giving each maze a one-of-a-kind design. I want to delight, surprise and amuse people."

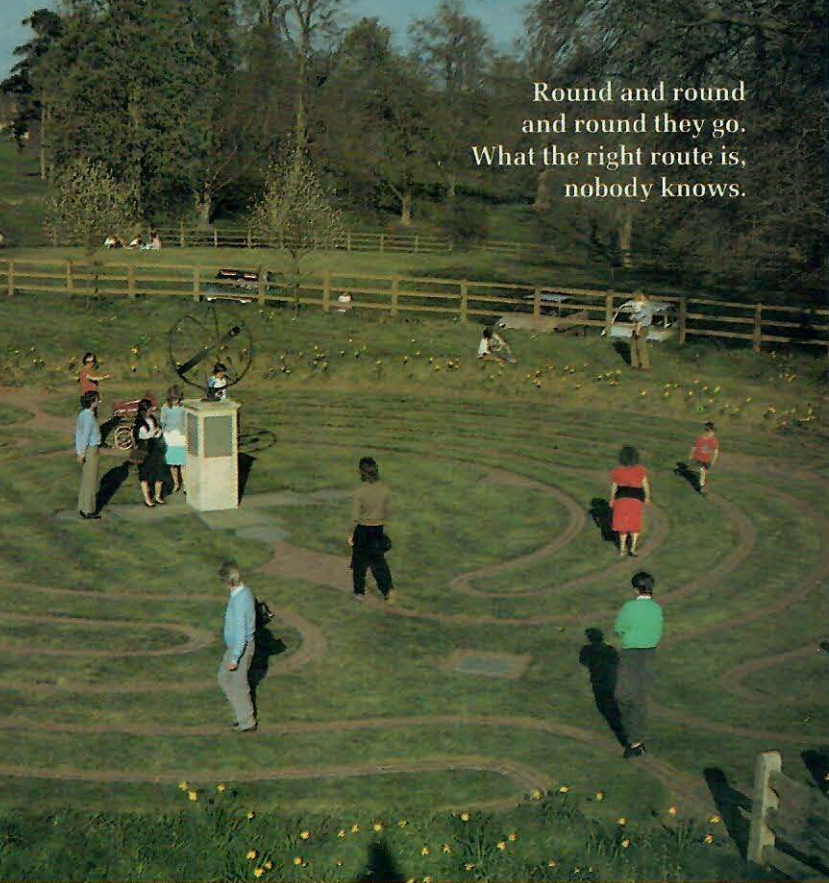
Mazes with a Theme

Mr. Fisher also tries to tie the theme of each maze to its location. For instance, a maze designed by his company for Liverpool, a sea-

Solve this royal rose
maze and you come
to a people-size
chess board.



Round and round
and round they go.
What the right route is,
nobody knows.



PHOTOS © MINOTAURO DESIGNS

port in England, is based on the Beatles' song "Yellow Submarine." (The Beatles, a 1960's rock group, were from Liverpool.) Brick footpaths criss-cross a lake and lead to a yellow submarine at the lake's middle. Though the sub is not real, it looks authentic. Spare boat parts were used to put it together.

Any maze built at a private home is usually designed to suit the owner's personality. One maze in England is in honor of the royal Tudor family. Since the symbol of the Tudors is a rose, the maze itself forms the shape of a rose. More than 27,000 bricks were required to build the paths.

Perhaps the most unusual maze of all is being built at a castle in England. The maze is entered by crossing a drawbridge that goes above a dry moat and into a hedge maze. The hedge maze spirals up a hill. From the top of the hill, a visitor enters an underground cave and exits through a secret passage.

Mr. Fisher takes real pleasure in watching people walk through each of his mazes. "I especially like to watch adults go through them," he says. "They get lost right away, and it forces them to act like children for half-an-hour."

No question about it: Mr. Fisher loves to tell people to get lost! 🐞

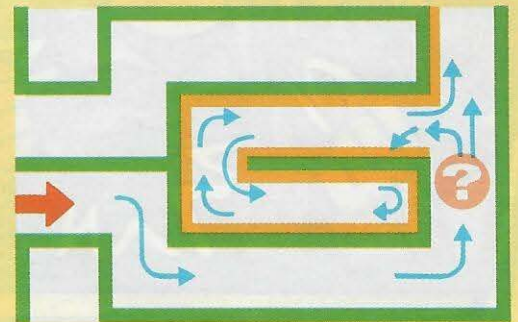
Blind Alleys

A maze can be round or square. Yet no matter what the shape or size, each maze presents you with the same problem: Can you find your way safely through? For most mazes, the answer is "Yes!"

When you draw a line with a pencil through a maze, as you might in a magazine maze, it's easy to retrace your steps. For example, when you hit a dead-end path, you simply follow the pencil mark back to another fork and try again.

But it's not so easy in a life-size maze because you don't have a "bird's-eye" view. You can't see the whole maze at one time.

How is it possible to reach your goal if you can't see where you're going? In many older mazes the answer is simple. It's known as the left-hand rule. When you've entered a maze and you come to a fork, always follow the left wall. (See drawing.) If the fork is a dead end, turn around. The wall on your left will lead you back to the correct path. Eventually you'll find your way to the center of the maze.



But even this rule won't help you solve a really tough maze. Remember, a good maze-maker like Mr. Fisher knows the rule, too. And he can always find a way to break it.

That's for the best, Mr. Fisher says. If you could easily solve every maze you do, you'd give up in no time. After all, a maze with no challenge, no mystery, is no fun.

Factoids

Most people have about 100,000 hairs on their heads.



The average American eats 8.4 pounds of peanuts a year.



Homing pigeons can fly as far as 1,000 miles.

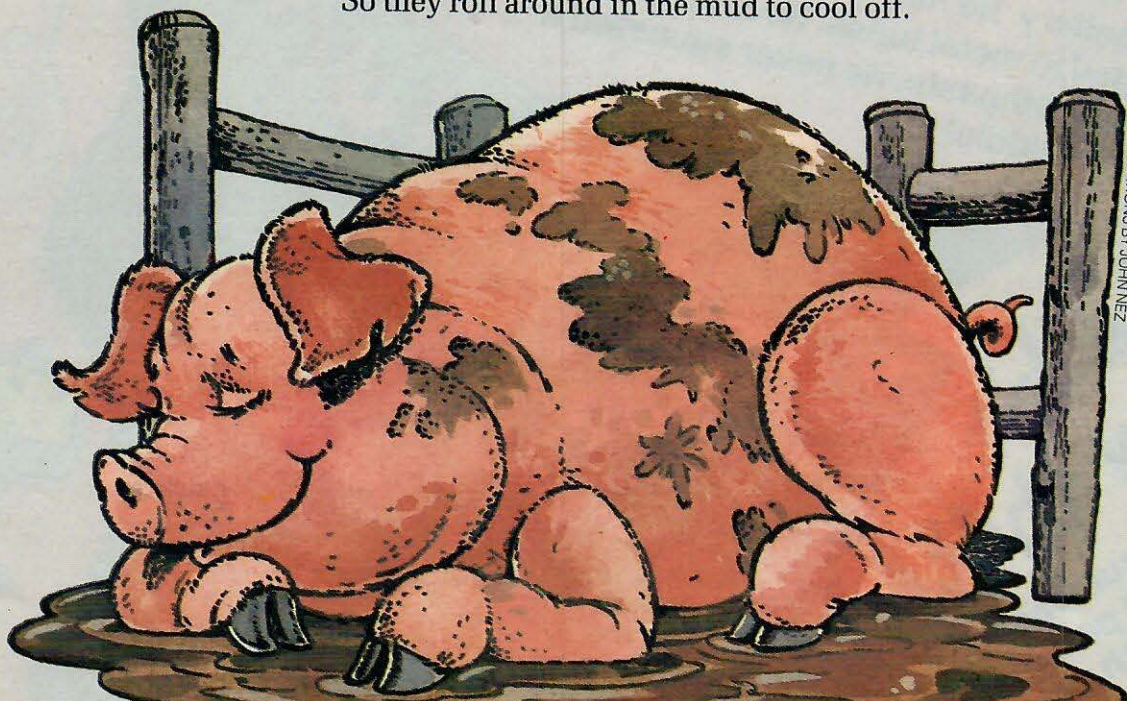


There are only
400 \$10,000 bills in
circulation.



The cowbird
lays its eggs in the
nests of other birds.
The other birds raise
the cowbird's young.

Pigs have no sweat glands.
So they roll around in the mud to cool off.



ILLUSTRATIONS BY JOHN NEZ

Kooler News



Kooler Moments in History

Before 1892, people dipped their toothbrushes in china pots of tooth cream. Dr. Washington Wentworth Sheffield was a dentist who thought this was disgusting and not at all sanitary. He had seen European foods packaged in metal tubes. He invented a flexible tube for toothpaste. He never squeezed it from the middle!

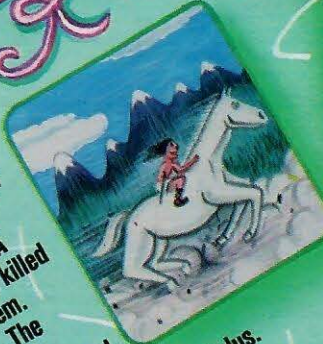
You know
you're
Kooler
when

I didn't
Know that!
A family of four washes
one ton (2000 pounds)
of laundry each year!

Kooler Kids

When Alexander the Great was a little boy, his father, King Phillip of Macedon, had a horse named Bucephalus (byu-SEF-a-liss). A few of Phillip's trainers were killed when Bucephalus threw them. Phillip decided to kill him. The morning Bucephalus was scheduled to die, Alexander jumped on his back. The horse took off. That night, Alexander returned riding Bucephalus. Alexander rode Bucephalus when he became king.

If you're a Kooler Kid or know of one,
send us your photos and letters.



Ask Dr. Know

Dear Dr. Know,

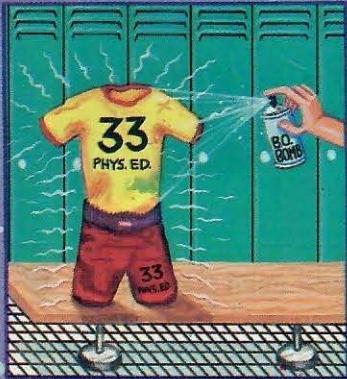
I'm 15 and I'm a mess. All my friends seem to know exactly where they want to go to college and what they want to study and where they want to work and what kind of car they want to drive. I don't even know what I want to wear to school tomorrow. Is there any hope for me?

Yours truly,
A Mess

Dear Mess,

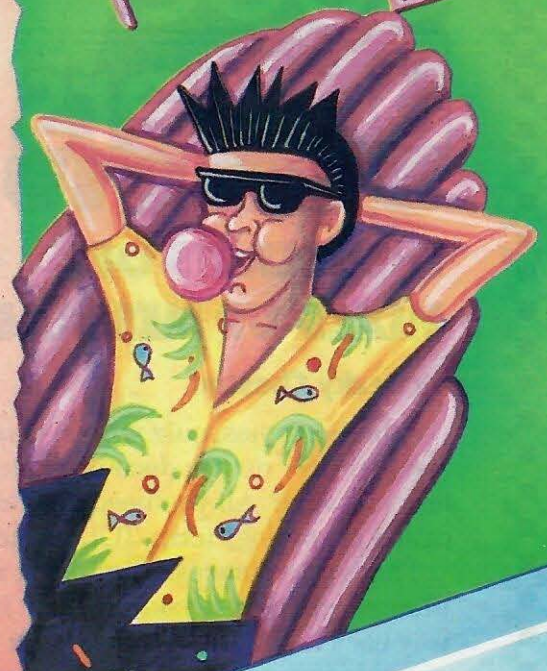
You're not a mess. You don't have to know everything now. Relax. Take a deep breath. You have a few more years before you have to decide what you're going to do with the rest of your life. In the meantime, wear something comfortable.

Mail your Kooler questions to Dr. Know.



your gymsuit
doesn't stand up
by itself.

Mail us your ideas!



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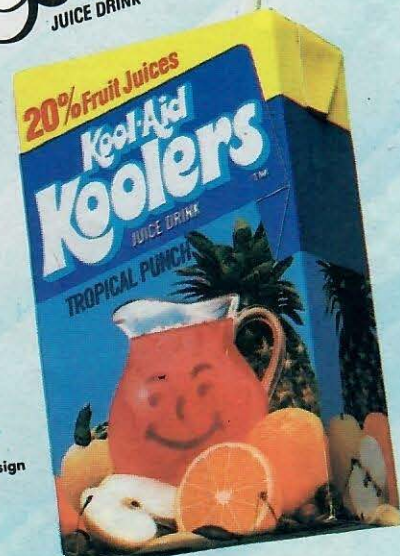
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Code Busters

THE SECRETS OF MIXED-UP MESSAGES

by Decky Cheston

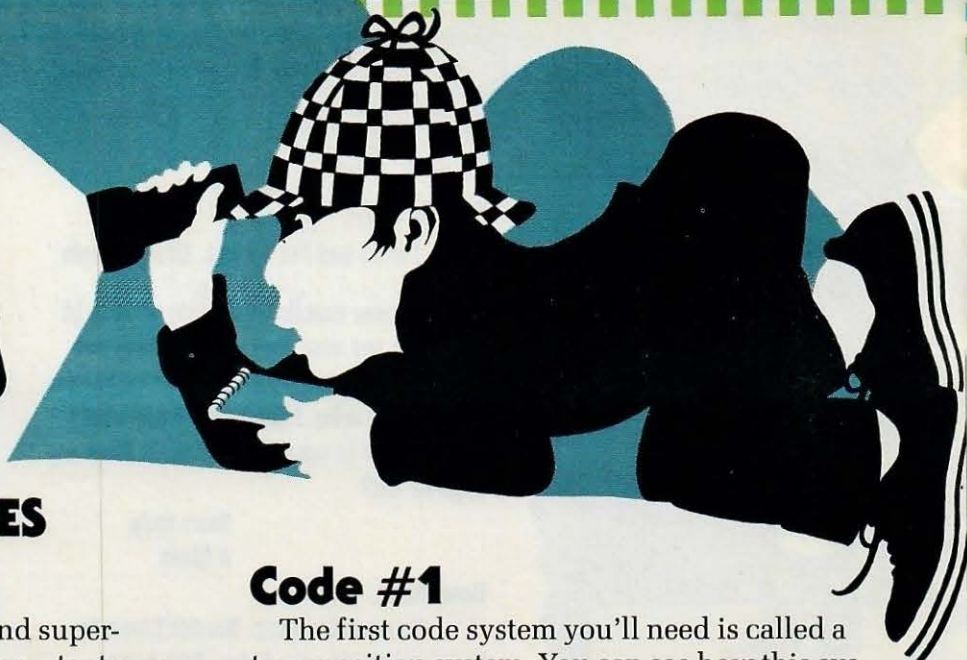
Attention spies, quiz whizzes and super-sleuths! How do you decode an important mystery message? All you need is science, a science called *cryptology* (crip-TOL-oh-gee).

That's the science of disguising words or phrases and then decoding them. It goes all the way back to the ancient Greeks. In fact, the word cryptology comes from the Greek verb "to hide."

Every code has a system to it. An expert cryptologist knows many different coding systems. To unscramble a message, the expert code-breaker first tries to discover its code system. After that, decoding is easy—and fun!

On these pages are three of the most common codes. You can use them to write secret messages to friends or even have code contests. And there's a special bonus: After you figure out the three secret words below, you can help the Bloodhound Gang solve this month's mystery!

(Answers are at the bottom of the page.)



Code #1

The first code system you'll need is called a *transposition* system. You can see how this system got its name—the letters of the message stay the same, but are put in different *positions*.

Usually the letters are rearranged into groups of five letters. For example, in this code the phrase **HIDDEN WORD** might look like this: **EDIHD WROND**.

But most phrases don't divide neatly into groups of five. If a message has only 13 letters, for example, then you're going to have to add two extra letters. You should always use the same letter to fill in the spaces. In the code below, the letter **X** is used to fill in the gaps. Can you decode the phrase?

LEJYL HGDou TUXNX

Code #2

The next system is called *bilateral substitution*. It's a long name, but it's not a hard system to learn. This system puts the alphabet into a grid like this one:



	A	E	I	O	U
B	A	B	C	D	E
C	F	G	H	I J	K
D	L	M	N	O	P
F	Q	R	S	T	U
G	V	W	X	Y	Z

In this code, each letter in your message is represented by two letters. Here's how you do it. To code the letter N, first find N inside the box. Then you follow the row of letters to the left, outside the box, to find **D**. That is the first letter of your code. Go back to N, and follow the column up until you're outside of the box. That gives you the letter **I**. In this code, the letter N becomes **DI**.

To decode a letter, you just reverse the process. For example, to decode **FO**, you locate **F** in the column to the left of the box and **O** in the row of letters across the top. Go across from **F** and down from **O**. The point where the row and column meet is at the letter **T**. So **FO** is decoded as **T**.

Note that in this system, the letters **I** and **J** are in the same spot on the grid. So the code **CO** can be either an **I** or a **J**.

Using this code, can you decode the word below?

BE BA FE FE BU DA

Code #3

This last code system has an even longer name. It's called *monoalphabetic substitution*. Once again, don't let the name scare you off. You've probably already used this code system!

This system uses two alphabets, one next to the other:

A	B
B	A
C	R
D	N
E	E
F	Y
G	C
H	D
I	F
J	G
K	H
L	I
M	J
N	K
O	L
P	M
Q	O
R	P
S	Q
T	S
U	T
V	U
W	V
X	W
Y	X
Z	Z

To make up the second alphabet, you pick any word, such as **BARNEY** and put those letters first. Then you add the rest of the letters in their correct order.

To code a message, you find the letter in the first alphabet, then look across to the letter next to it in the second alphabet. In this case, the letter **N** would be coded as a **K**. To decode, you just reverse the process. See if you can decode this:

NBKRE RIBQQ

Now you're set to help Vikki, Skip and Ricardo. Just turn the page and **AXHEV NUXFX!!**

THE BLOODHOUND GANG

The Case of the Coded Crimes

by Decky Cheston



"Not again!"

Vikki walked into the office to find Skip and Ricardo sitting across the desk from each other, playing cards.

"Shall I deal you in, Vikki?" asked Ricardo, shuffling the deck.

"You can count me out!" said Vikki. "I've got better things to do."

"Such as?" asked Skip.

"Just look out the window," she replied.

The boys ran over to see. Below a man was sitting in a blue Chevrolet, drinking a cup of coffee.

"Hey!" shouted Skip. "It's Detective Trowbridge!"

"Now there's a guy you can count on when the chips are down," said Ricardo. "Let's ask him up here for a game of Hearts."

"It might be more fun if we went out there," said Vikki.

"Why's that?" asked Ricardo.

Vikki smiled. "Because I think he's on a stake-out!"

Akxbn Obxry Bexrx

The trio raced down the stairs and across the street, hoping to find out about the investigation. Trowbridge was in his car, selecting a doughnut from a large box.

"What's happening, Trowbridge?" asked

Ricardo, walking over to the driver's window. It was smeared with powdered sugar from the doughnuts.

The detective looked startled to see them. "Quick!" he whispered. "Get in!"

Vikki and Ricardo jumped into the back seat and Skip got in front.

"What's the big deal?" Skip asked.

"I don't want him to see us," Detective Trowbridge answered.

"Him who?" asked Vikki.

Trowbridge pointed across the street to a tall man sitting on a bench, hunched over a newspaper.

Skip laughed. "Looks like he's doing the crossword puzzle. That's no crime. Who is he?"

"Simon Barker," Trowbridge replied. "I've been tailing him for two days."

The detective wiped a smudge of vanilla cream off his rearview mirror. "Barker heads up a national gang of bank robbers. They've pulled five robberies in five different cities during the past year!"

"Why don't you arrest him?" asked Vikki.

"Because he's never in on the actual robberies. He just plans them. The problem is: We can't figure out how he gives orders to his gang. He never seems to talk to them."

"Look!" exclaimed Vikki. "He's making a move."

All four pairs of eyes followed Simon Barker as he folded his newspaper, got up from his bench and walked over to a nearby phone booth.

"Boy!" sighed Trowbridge. "What I wouldn't give to have a tap on that phone."

But Barker didn't even make a call. After a few seconds he stepped out of the phone booth and walked away, leaving his newspaper behind.

Quickly, Trowbridge started the car's engine. Just as quickly, he shut it off.

"What are you doing?" yelled Skip. "He's getting away!"

"I'll radio one of my men and have them pick up the tail," Trowbridge answered. "We're staying put. Look who just showed up."

Skip's jaw dropped open. "It's Barney Diamond!" he exclaimed.

Both Vikki and Ricardo gasped. Anyone would have recognized Barney Diamond, a former secret agent who'd just served a prison term for robbery.

"What's he doing here?" asked Ricardo.

"I don't know," answered the detective. "But if he's mixed up with Barker and his gang, we're in bigger trouble than I thought."

The Bloodhound Gang watched as Diamond walked into the phone booth, carrying a grey leather briefcase. He picked up Barker's newspaper.

"Must be an interesting crossword," joked Skip.

"Shhh!" whispered Vikki. "Look!"

Diamond picked up the phone, dialed a number and spoke a few words into the receiver. Then he hung up.

"Boy," Trowbridge sighed. "What I wouldn't

give to be able to read lips."

"Start the car!" said Vikki. "He's leaving!"

Trowbridge turned the key and put the car in reverse.

"Stop!" yelled Skip and put his hand on the steering wheel. It was coated with chocolate icing.

"We're wasting time," said Trowbridge.

"Following Diamond would be a real waste of time," said Skip. "The answer's in that phone booth."

Mbmep Mtzzie

Skip ran across the street and into the phone booth. Vikki, Ricardo and Detective Trowbridge got out of the car. Soon Skip returned, carrying the folded newspaper.

"Don't you get it?" he exclaimed. "Barker left a message on this paper. Then Diamond picked it up, made his call and relayed the message to whomever was on the end of the line."

"Great!" said Trowbridge. "If we can read the message, the police can be at the next bank in time to stop the hold-up."

"And I know just where the message is," added Skip. "Hidden in the crossword puzzle."

Skip opened the paper to the crossword puzzle and everyone crowded around him. Quickly, their excitement turned to disappointment.

"It's blank!" Ricardo moaned.

"Wait," said Vikki, and she pointed to some words scrawled at the bottom of the page.

"What's this?"

"Looks like a bunch of gibberish to me," said Trowbridge.

The Bloodhound Gang studied the jumble of letters. This is what they saw:

VNSIA SDNAG AXLON—transposition.

BI CI CO BI BA CE DO—bilateral substitution.

LKE MJ STEQNBX—monoalphabetic substitution.

(BARNEY).

Suddenly Vikki let out a shriek and ran back toward the Bloodhound Gang office.

"What's with her?" Skip asked.

Skip, Ricardo and Trowbridge waited on the sidewalk. After a minute Vikki came racing back with a magazine rolled up in one hand.

"Vikki, what's wrong?" joked Ricardo, ➡





ILLUSTRATION BY BOB PEPPER

pointing to the jumbled letters. "Don't you know, sticks and stones may break your bones, but words will never hurt you?"

"Yeah, even strange words like these," agreed Skip.

"What's that?" asked Ricardo looking at the rolled-up magazine. "We don't have time for reading. We're trying to solve a case."

"Those aren't strange words," Vikki replied. "That's code! And we need this magazine to help us figure it out."

"What are you talking about?" asked Trowbridge. "How do you know this is a code?"

"Because I read about it in this month's 3-2-1 CONTACT," answered Vikki. "It's got a whole section on codes."

"That's how you knew it was a coded message!" said Ricardo.

"Right!" said Vikki.

"So how do we figure out what the code is?" Skip asked.

Vikki looked at the code. "There are three phrases, and it looks like they're in three different codes. Let's each take one and try to solve it. We can use the article in the magazine to help. We'll need some blank paper."

"Here, use this," Trowbridge said and handed her his notebook. There was a blob of raspberry filling on the cover.

The three Bloodhound Gang members walked over to a bench and sat down to crack the code.

"Hey," said Detective Trowbridge, "what am I supposed to do?"

"Oh, you've got your work cut out for you," Ricardo said with a smile. "There are four doughnuts left in the box in the car."

STOP! Can you decode the strange message and find out where the next bank robbery will be?

Turn to page 12 to find out how to break the codes.

Pskix Kates Hetxc Kaxex

About a half an hour later, Vikki, Skip and Ricardo raced across the street to Detective Trowbridge's car. The police officer was in the front seat, licking his fingers.

"I see you've been busy," said Skip. The doughnut box was empty.

"Ready for dessert, Detective?" asked Ricardo. "Because we have some real sweet news for you."

"We've decoded Barker's message!" Vikki said with a big grin.

The detective got out of his car. "What does it say?" he asked.

Vikki handed him a piece of paper. It read:

SAVINGS AND LOAN. CHICAGO. ONE PM TUESDAY.

"The next robbery," said Skip.

"Tuesday!" exclaimed Trowbridge. "That's today! Well, there's not going to be another robbery, not by Barker's gang."

He reached inside his car for his radio. "I'll put out the alert!"

"I don't know how you kids did it," he said after he had warned the Chicago police. "It all looks like a jumble to me."

"You could do it too," Vikki told him. "Just look in here." She handed him the magazine.

"Yeah," added Skip. "One of the code puzzles uses your favorite words — **LEJYL HGDOU TUXNX!**"

Watch for next month's Bloodhound Gang mystery!

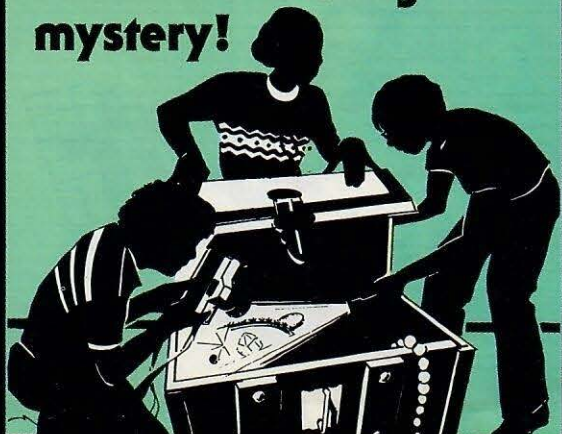


ILLUSTRATION BY DAVE FEE BLAND

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- 24K gold-on-gold border
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On September 8, 1966, *Star Trek*® premiered on television and won an immediate following among scientists, science fiction fans, and adventure enthusiasts.

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RESPOND BY: March 31, 1987

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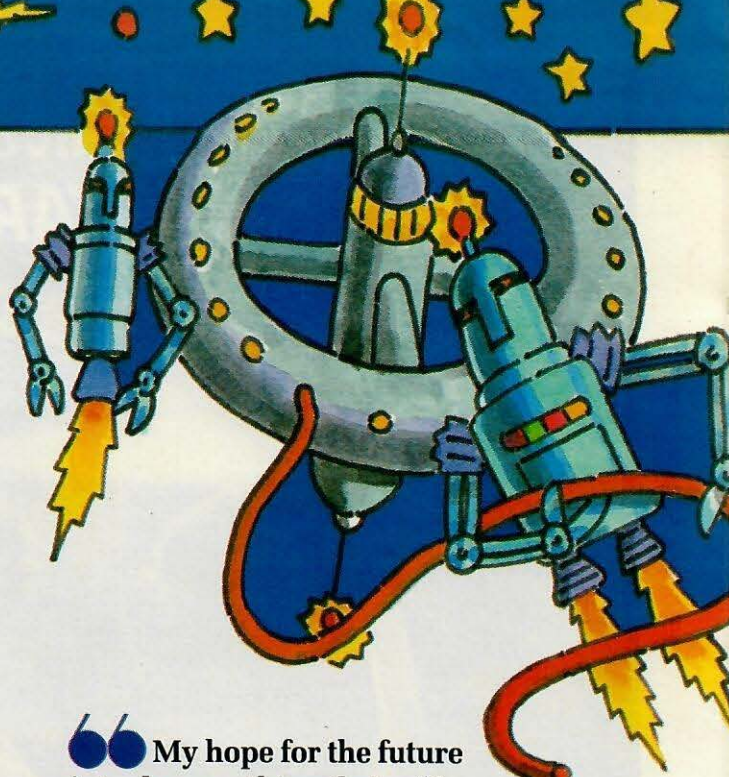
2006

CONTACT READERS LOOK AT THE FUTURE

What do you think life will be like in the year 2006? That was the big question we asked you in our "Future Perfect" poll in the September 1986 CONTACT. And you let us know—in a big way. More than 10,000 readers sent in answers. We read your ideas, counted them up and entered your predictions on our computers. Here at last, are the results.

According to most of you, the world in 2006 is going to be a safer place in which to live. The U.S. and the Soviet Union will be better friends than they are now. Even though many of you worry about nuclear war, most of you don't think one will take place.

“I hope that all countries and people in the world will live as one and learn to solve problems.”



“My hope for the future is to do something that will help all people.”

Cleaning Up, Fueling Up

Planet Earth will be cleaner, at least if you all get your way. One reason: 60 percent of CONTACT readers think that we'll be getting most of our energy from the sun. The next most popular energy source is nuclear power.

Speaking of energy, one question we should have asked is: "What energy source will your personal robot run on?" Almost all of you predicted that robots will be doing many household chores in the year 2006. They'll be used for cleaning, cooking, taking out the trash, walking the dog and waking us up in the morning.

Robots may be doing household chores, but the homes in which they work may not be like the homes of today. You predicted that some people will be living in undersea communities, space colonies or cities deep below the ground. Boys especially were into this idea.

What will school be like in 2006? A lot different than today if your predictions come true. Most of you think that kids will learn their lessons from computers. But the news isn't all bad for teachers: Some of you think teachers will still be doing most of the teaching.

Good News and Bad News

Just about half of the readers think that cures for cancer, AIDS, the common cold, chicken pox

and heart disease will be found in the next 20 years. Some readers felt only some of these diseases would be cured. Older girls expect a cure for cancer. Younger girls and boys think that scientists will find cures for chicken pox and colds.

Of course, if these diseases are cured, then people will be able to live longer. How much longer? Well, the largest number of kids chose 90 years. Next came 100 years, and then 110.

Life in Space and on Earth

With all that extra time, you told us that people will be able to move to other planets. But most of you don't want to live in space full time. (Apparently planets are a nice place to visit, but who wants to live there?) Readers added that there would be regular flights between Earth and planets in our solar system.

As for what people will find on other planets, 81 percent say we'll be discovering some sort of life form. The most common choice is plant life. Not too many of you think we'll be visited by these leafy critters in the next 20 years.

Men and women will equally share the work of raising children in 2006. Outside the home, most of you predict that men and women will be doing the same jobs—and getting the same pay. These jobs may lead right to the White House. Eighty-three percent predict there will be a woman President in the next 20 years.

“I hope that by 2006,
I'll win big on a TV
game show.”



“I hope the
world in 2006 will be
like the Jetsons.”

What types of jobs will you have? Many are science-related: doctors, veterinarians or nurses. The next most popular choices are working in entertainment or the arts (ballet dancers and rock singers), working in outer space and going into business.

And who will you come home to after a hard day at the office, the hospital or the studio? The majority of boys say they'll have two kids. Girls say either one or four. That, of course, is after getting married between 20 and 25. In general, girl readers think they'll get married younger than boys.

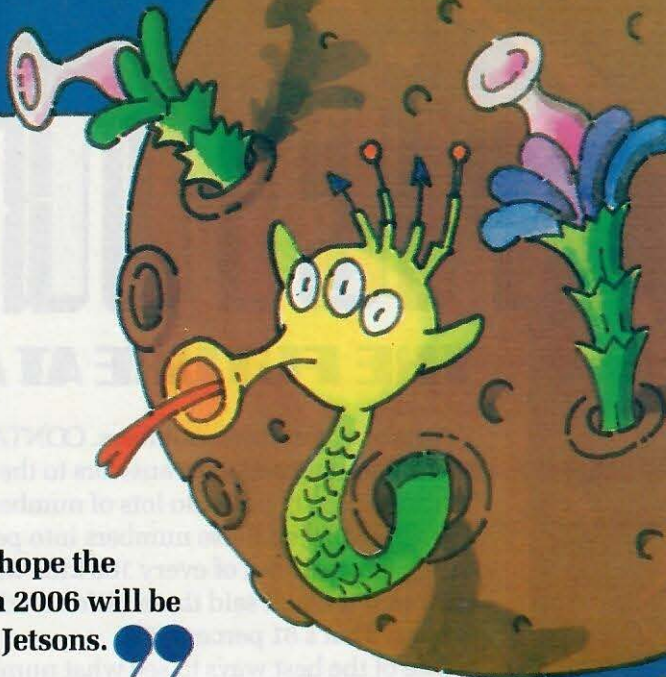
Future Dreams

You've got wonderful hopes for the future. Most of you chose peace as your greatest wish. Of course, there are other choices including a good job, personal happiness, and making pots of money.

Whatever you wish, we hope it comes true. And we hope your one, two, or four kids will be reading CONTACT in 2006.

Thanks so much for making this the best CONTACT poll ever. What you told us is important and interesting. It's good to know that our future is in good hands—your hands. We're looking forward to 2006, and based on your predictions, you are too!

Turn the page for another way to look at the “Future Perfect” poll. ➔



PICTURE THIS

THE FUTURE AT A GLANCE

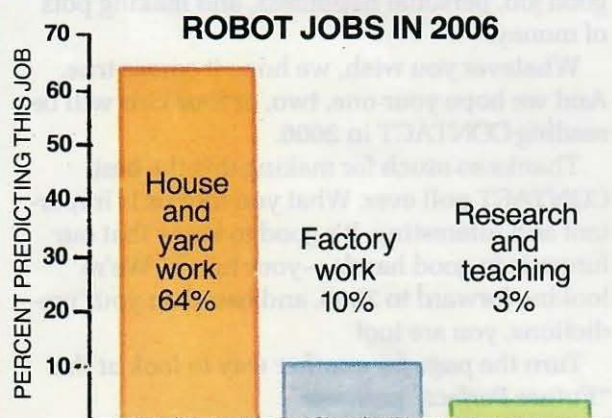
Numbers, numbers, numbers. CONTACT's computers churned your answers to the "Future Perfect" poll into lots of numbers. Then they turned those numbers into percents. For instance, 81 out of every 100 kids who answered the poll said there's life on other planets. That's 81 percent (%).

One of the best ways to see what numbers mean is to turn them into graphs. Graphs are a good way to get information at-a-glance.

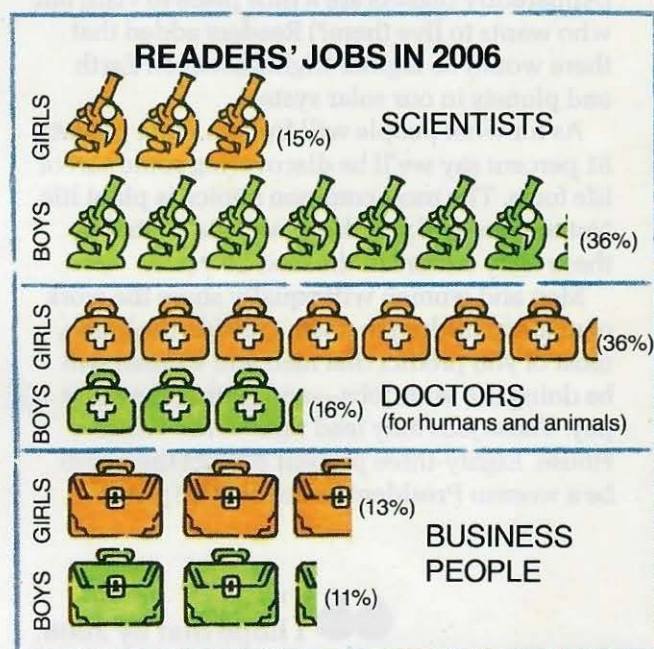
When you see a graph, always look carefully to see what information the graph shows. In the pictograph on the right, for example, each little picture stands for five percent of our poll-answerers. Five pictures mean 25 percent. One-and-a-half pictures mean 7½ percent.

Now, on to some graphs that show what CONTACT readers are thinking.

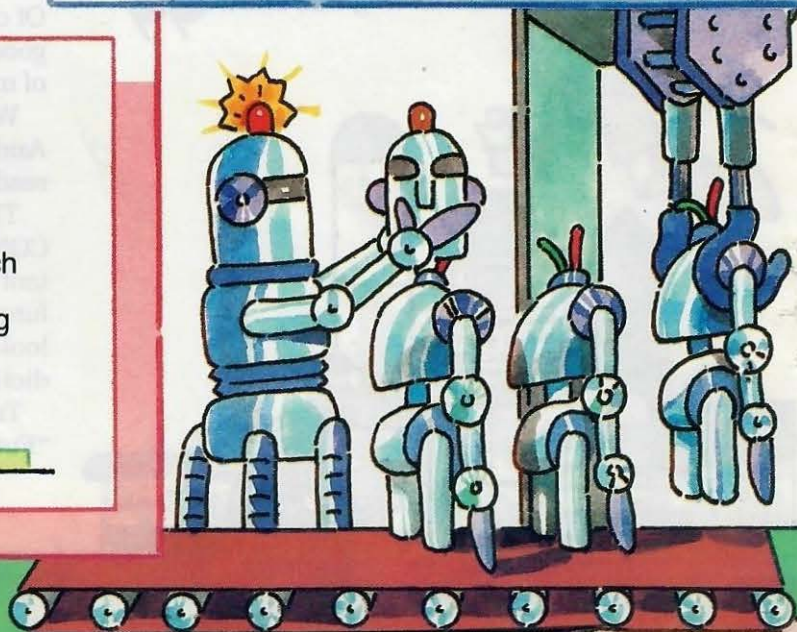
Bar graphs come in the shape of—you got it—bars. They help you compare information—like the different jobs our readers think robots will do in the future. That's what this bar graph shows. Look on the graph to see the type of job each bar stands for. On the left side, you'll see a ruler showing what the length of each bar means.



Pictographs use pictures to give information. They're a neat way to show big amounts. This one shows the jobs many boys and girls hope to have. (Percents don't add up to 100% here because only a few jobs are included.)



Each symbol stands for 5% of our readers

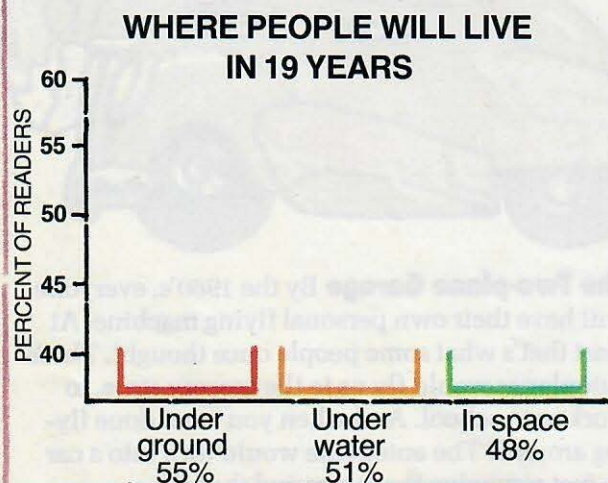
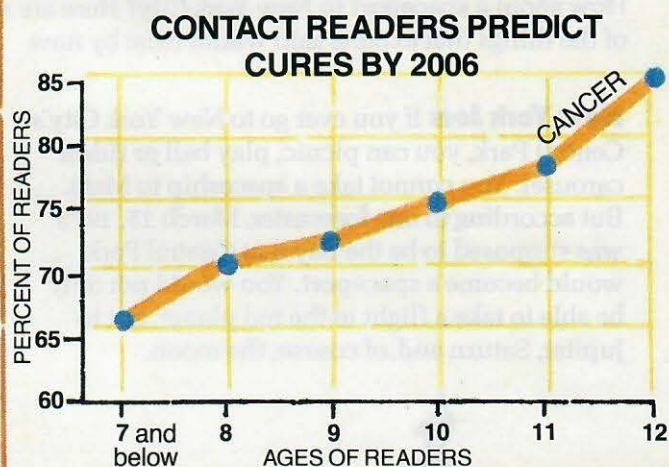


Line graphs help show how things change. We found that, as our readers get older, they change their ideas about cures for different illnesses. This line graph shows how readers of different ages predicted a cure for cancer.

The numbers along the left side of the graph tell what percent of the readers predicted a cure. The numbers along the bottom list readers' ages. Follow each age line up from the bottom and you'll find a big dot. Then look across to the left and you'll find out the percent of readers of that age who predicted a cancer cure. (For extra help, we've listed the ages and percentages in the box below.)

Now it's your turn. In the box below, right under the percentages of readers who predicted a cancer cure, you'll find percentages of readers who predicted a cure for chicken pox! You get to make the chicken pox-cure graph. Follow each age-line on the graph up to the right percent-line, and make a dot. (Some dots will be where lines cross. Some will be a little above or below the crossing.) Just connect the dots to make your line graph. (Answer on Did It! page.)

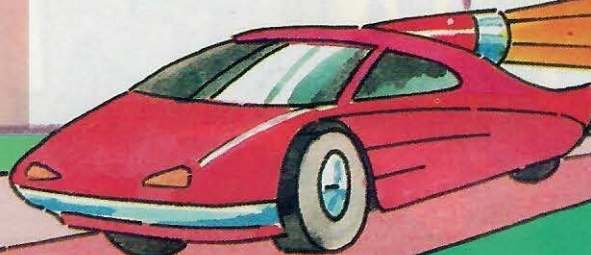
PERCENT PREDICTING CURES						
AGES OF READERS	7	8	9	10	11	12
CANCER	66%	69%	71%	74%	77%	84%
CHICKEN POX	70%	66%	70%	64%	61%	62%



Now try your hand at a **Bar graph.**

It's the perfect way to compare readers' ideas about where people will live in 2006. The information you need is below the graph, and we've drawn in the bottoms of the bars. You figure out where to top them off. (Answer on Did It! page.)

ILLUSTRATIONS © BOB DELBOY



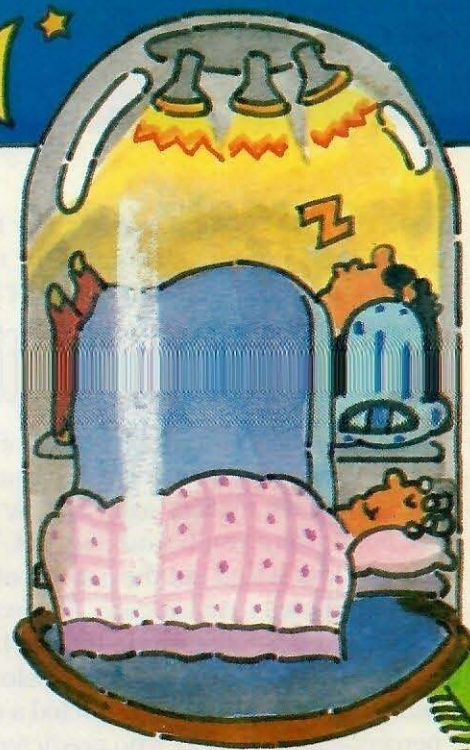
1987

WHAT THEY THOUGHT WE'D BE DOING NOW

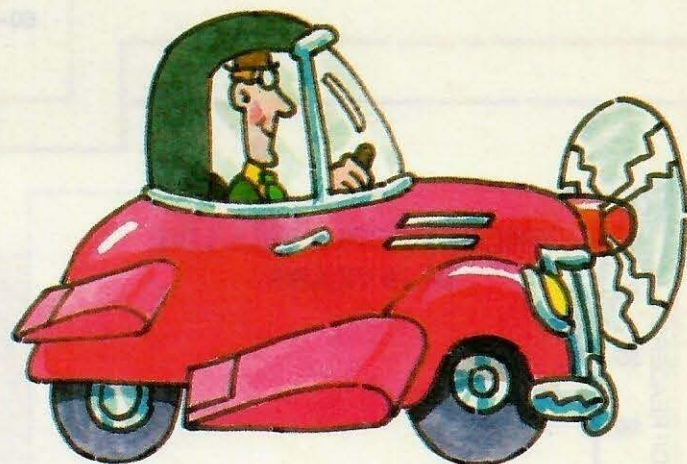
by Renee Skelton

CONTACT readers aren't the first people to try and predict the future. Over the years, many experts have tried. Some of their predictions came true and others didn't. For instance, have you ever seen an autoplane? How about a spaceport in New York City? Here are some of the things that experts said would exist by now.

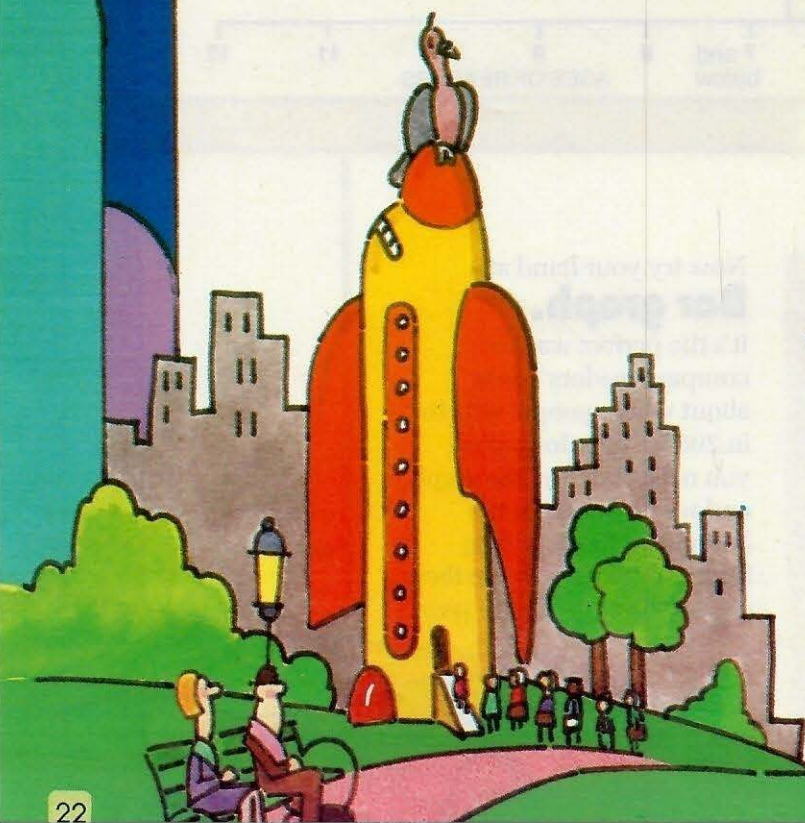
New York Jets If you ever go to New York City's Central Park, you can picnic, play ball or ride a carousel. You cannot take a spaceship to Mars. But according to one forecaster, March 15, 1975 was supposed to be the day that Central Park would become a spaceport. You would not only be able to take a flight to the red planet, but to Jupiter, Saturn and, of course, the moon.

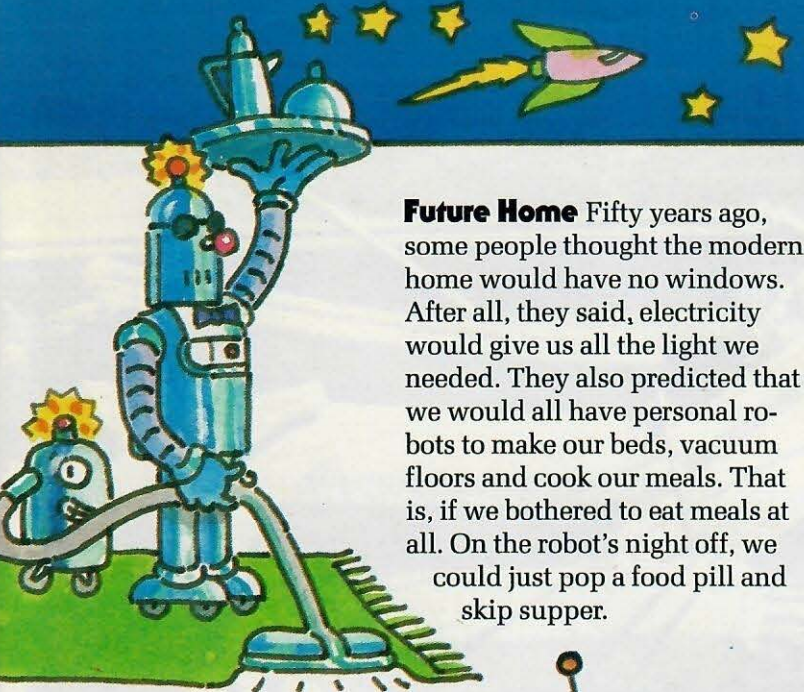


Sweet Dreams A drawing in a 1930's magazine showed one person's idea of how people would be sleeping today. Our beds would be covered by glass domes. Along the top of the dome, a row of special light bulbs would bathe us in ultraviolet (UV) radiation. UV radiation is the part of sunlight that makes you tan or burn. In those days, people mistakenly believed that sleeping under UV lights would reduce your chance of catching a cold.



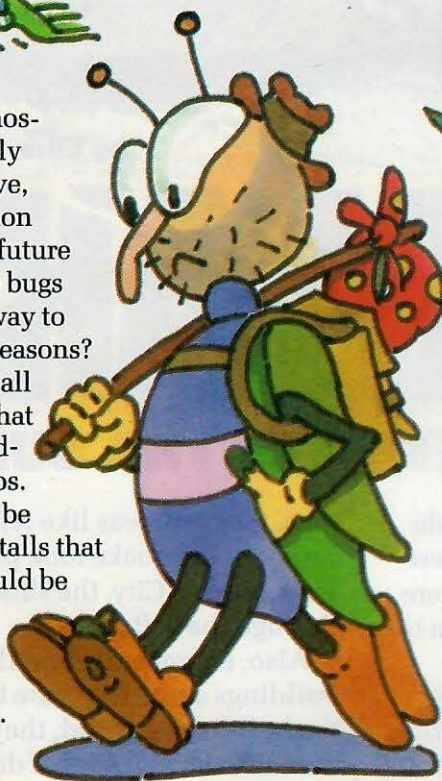
The Two-plane Garage By the 1980's, everyone will have their own personal flying machine. At least that's what some people once thought. These autoplanes would fly us to the grocery store, to work or to school. And when you were done flying around? The autoplane would turn into a car by just removing the wings and the tail.





Future Home Fifty years ago, some people thought the modern home would have no windows. After all, they said, electricity would give us all the light we needed. They also predicted that we would all have personal robots to make our beds, vacuum floors and cook our meals. That is, if we bothered to eat meals at all. On the robot's night off, we could just pop a food pill and skip supper.

Bye-Bye Bugs Seen a mosquito, a cockroach, or a fly lately? You shouldn't have, according to one prediction from around 1900. That future forecaster said that those bugs would be well on their way to extinction by now. The reasons? First, we'd have drained all the swamps and ponds that provide homes and breeding grounds for mosquitos. And since horses would be replaced by cars, horse stalls that were homes for flies would be gone too. There was no reason given by this predictor for the disappearance of cockroaches. Maybe that was just wishful thinking.




A Fishy Idea In the early 1960's, one scientist thought that by 1976 hurricanes would be a thing of the past. His bright idea was to cut off the heat from the ocean that helps hurricanes to form. To do this, people would spread a chemical across miles of ocean. This would reflect *all* sunlight, and the ocean wouldn't heat up. Without the heat energy, hurricanes wouldn't form. Needless to say, this idea was all wet.

Let Your Fingers Do The Shopping One 1933 magazine said today's supermarkets would have one long conveyor belt with rows of stools alongside. To shop, you'd take a seat on one of the stools as cans and boxes of food rolled by.

As they did, you'd pluck off the items you wanted and drop them into a basket. Then you'd press a button and your groceries would be sent to a nearby room to be wrapped. 621





This California highway collapsed during an earthquake in 1971.

by Ellen R. Mednick

EARTHQUAKE!

SCIENTISTS LOOK BENEATH THE SURFACE

On a September morning in 1985, the people of Mexico City were getting ready to start a new day. It was just an ordinary morning, until there was a loud rumbling noise. The ground began to shake and sway. Earthquake!

Buildings collapsed. Telephone and electric lines broke. The quake caused millions of dollars worth of damage. And what's worse, 30,000 people were killed.

The disaster was a horrible act of nature. The number of tall buildings that collapsed in Mexico City may be the largest in history. But why so much destruction? Engineers and scientists from around the world have been trying to find out. And they've learned some important lessons.

According to Dr. David Russ, a scientist who studies the earth, buildings need to be built on solid ground that is strong enough to stand up against the tremendous rocking and shaking of an earthquake. In Mexico City, many of the buildings destroyed were built on land that used to be the bottom of a lake. Underneath the build-

ings, the earth was like Jell-O. Even though the center of the quake took place about 200 miles from Mexico City, the shocks moved swiftly through the soft ground.

Also, engineers found that many of the tall buildings stood too close together. And when the buildings swayed, they bumped into one another, causing a lot of damage.

Sensing Earthquakes

Scientists and architects around the world have been testing ways to keep buildings from collapsing in an earthquake. Researchers at the State University of New York are experimenting with a special instrument that could be placed in a tall building. The instrument would sense that an earthquake was happening. Then the machine would cause the building to sway in such a way that it would not collapse.

In San Bernardino, California, a new building stands on rubber posts. Laboratory tests before the building was built showed that during

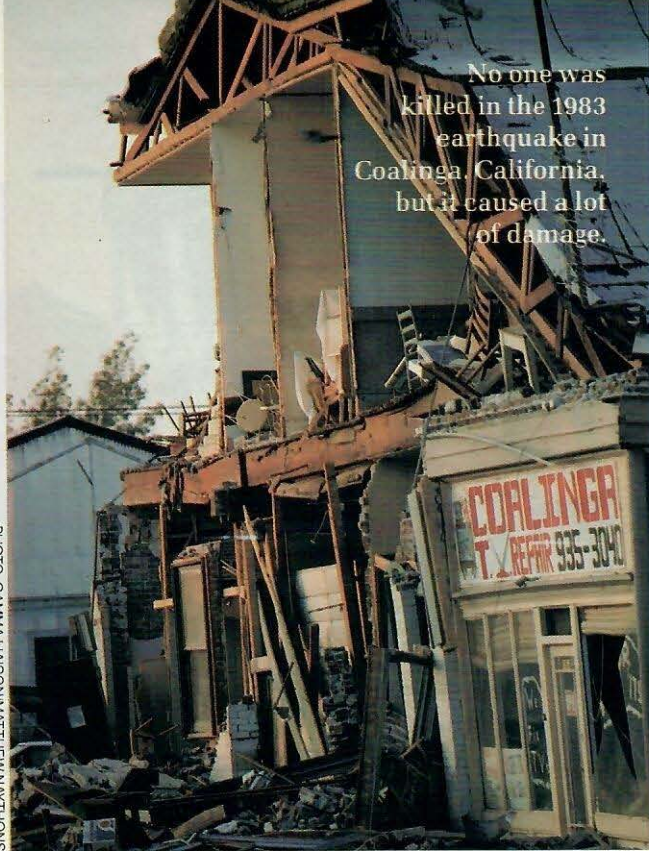


PHOTO: GAMMA LIAISON/MATTHEW NATHANS

No one was killed in the 1983 earthquake in Coalinga, California, but it caused a lot of damage.



PHOTOS: CALIFORNIA EARTHQUAKE EDUCATION PROJECT

Below: Workers go through the rubble following the Mexico City quake. Scientists are still trying to find out why the earthquake caused so much damage.

Above: Teachers and students in Oakland, California use maps and an earthquake simulator to help them understand how earthquakes happen.



PHOTO: GAMMA LIAISON/LAURA HOGLAND

severe shaking, the posts moved but the model of the building did not. This may be a way to build earthquake-proof buildings in the future.

At Georgia Tech University, scientists have developed a computer program which can figure out whether a building design would be safe in an earthquake. And one U.S. agency tests building materials to see if they can stand up to the shaking of an earthquake.

Predicting Earthquakes

Can we predict the exact time when an earthquake might hit? Not yet. But earthquake scientists are working hard to find some answers.

Each year there are thousands of small earthquakes. They cause little damage. But by studying where and when they happen, scientists can predict where the big earthquakes are likely to occur in the future.

Earthquake prediction in California is centered in a town called Parkfield. It's a place with very few people that's located on the San Andreas fault. Earthquake scientists believe there will be a quake near there in the next four years. Hundreds of instruments are in place. ➡

Another experiment is taking place at Cajon Pass near the San Andreas fault. Scientists there are drilling a hole three miles deep to try and find out how a fault works.

In Japan and China, earthquake sensing stations check for all kinds of clues that an earthquake may be coming—even the strange behavior of animals. Just before one earthquake, scientists observed snakes coming out of hiding, dogs barking loudly and pigs biting each other.

What Does an Earthquake Feel Like?

Most quakes are so small that people don't even notice them. Several years ago, there was an earthquake in Coalinga, California, that a lot of people *did* notice. There was a lot of damage, but luckily no one was killed.

Many people who experienced the quake were worried and upset after it was over. Sue Gonsalves is a woman who talked to a lot of kids after the Coalinga quake. Kids told her, "It sounds like a train is going straight through the house."

One girl explained, "I thought elephants were shaking the ground. The house shook so bad that a lot of things fell to the floor. My dad was in his truck and it shook so bad that he couldn't drive."

Ms. Gonsalves told CONTACT, "Even though you can't control nature, there are steps you can take to prepare yourself for an earth-



PHOTO: U.S. DEPT. OF THE INTERIOR—U.S. GEOLOGICAL SURVEY

quake." Here are some of them:

1. If you're inside, drop to the ground and cover your head.
2. Prepare a family plan. Select a meeting place in case members of the family are separated during the earthquake.
3. Have a safety kit ready with a flashlight and portable radio.

Learning About Quakes

Many safety steps are already being taught in

PHOTO: GAMMA LIAISON © HORATIO VILLALOBOS



A family in Chile stands in front of their destroyed home. Since the quake, there has been a push for stricter building laws.

Left: This house shifted during the famous San Francisco quake in 1906.


Below: In 1964, an earthquake struck Alaska. This school building was damaged in the quake. No students were there because of the Easter holiday.



PHOTO: WIDE WORLD PHOTOS, INC.

quake areas. In a program in Los Angeles, Yogi Bear explains what people should do. Yogi Bear's "Quakey-Shakey House" shakes and rattles just as it would in a major earthquake. Then, in a videotape, Yogi explains to kids "how to be prepared even though you're scared."

To keep kids in the know about earthquakes, California has an "Earthquake Preparedness Week" every April. Kids practice drills and hold discussions. They play earthquake games to learn what to do to stay safe.

Schoolchildren in California know that an earthquake is nature on the move and can't be prevented. By knowing what they can expect from an earthquake, and what safety rules to follow, kids are learning how to protect themselves. As safety expert Lynn Filderman told CONTACT, "Being safer—and smarter—is a good thing to be." 

What's an Earthquake?

Earthquakes occur whenever the rock below the surface of the Earth moves or breaks off suddenly.

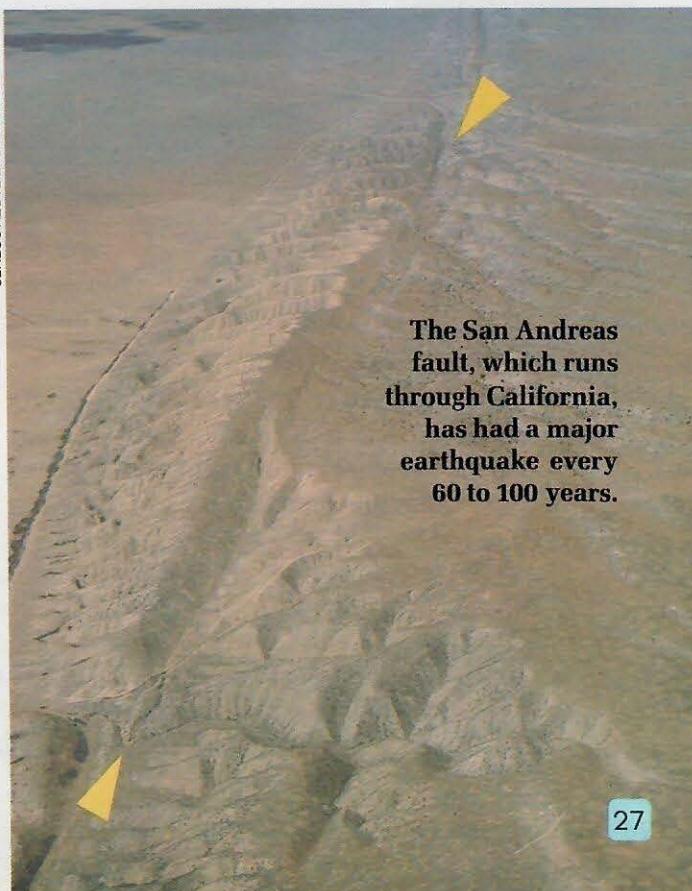
Although you don't usually notice it, the inside of the Earth is constantly moving. "The Earth is like a giant ball of melted rock with large pieces of solid rock floating over the top," Paul Davis, an earthquake scientist at the University of California, told CONTACT.

The Earth's crust is made up of 12 large plates—giant blocks that continually move. But they move very slowly, only about one to four inches every year.

Two plates may move towards one another, away from one another or past one another. Sometimes, instead of slipping past each other, two plates meet and get stuck. If the force between the plates becomes great enough, the plates slip suddenly and the jolt creates an earthquake.

The line where two plates meet is called a fault. The United States sits across two plates—the North American and the Pacific plates. They meet at the San Andreas fault, a line that runs straight through California. The San Andreas fault causes most of California's earthquakes.

PHOTO © BRECK P. KENT/EARTH SCENES



The San Andreas fault, which runs through California, has had a major earthquake every 60 to 100 years.

Contact Lens



PHOTO COURTESY JOHN MORAN

A Light Lunch

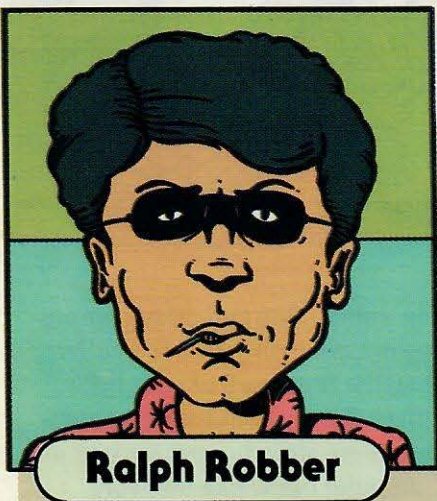
Here's an X-ray image of a reptile, but "watt" kind of reptile is it? Nope, it's not an electric eel. It's not a glowworm either. It's a snake that snacked on two 15-watt light bulbs.

This four-foot-long pine snake found the burned-out bulbs near a hen house in Florida. If the snake thought it was eating a couple of eggs, it was in for a shocking surprise. Luckily, it sucked them down whole.

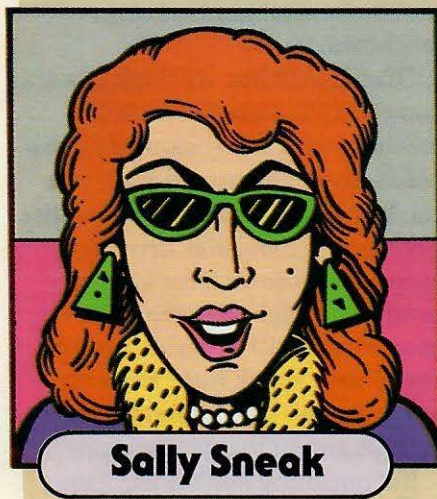
Friendly humans found the lumpy looking

snake and brought it to the University of Florida College of Veterinary Medicine. Doctors there were a little surprised, though they'd once seen a snake that had eaten two golf balls. They brought the patient to the operating room, slit open its side and slipped out the bulbs.

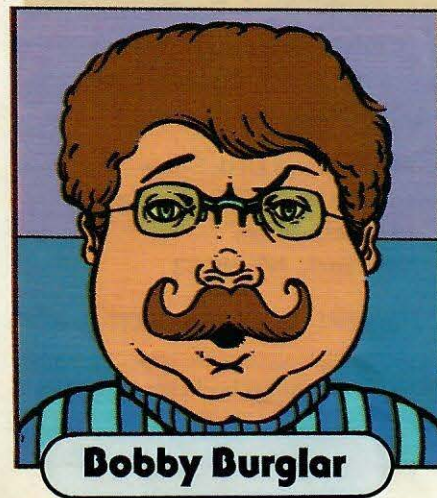
The operation was a shining success. The snake rested up for a few weeks, then slithered back to the woods. Doctors say its future looks bright.



Ralph Robber



Sally Sneak



Bobby Burglar

Micro Mystery

by Richie Chevat

Someone has stolen the fabulous Cornflake Crown Jewels—the prize jewel collection of the Cornflake family. The police are stumped and naturally they've gone to an ace private eye for help. (That's you!)

Luckily, the computer-controlled alarm system at the Cornflake mansion was on when the robbery took place. Unluckily, it broke down in the middle of the robbery. The thief got away with the jewels, and all you have is part of a computer printout to help you find the crook.

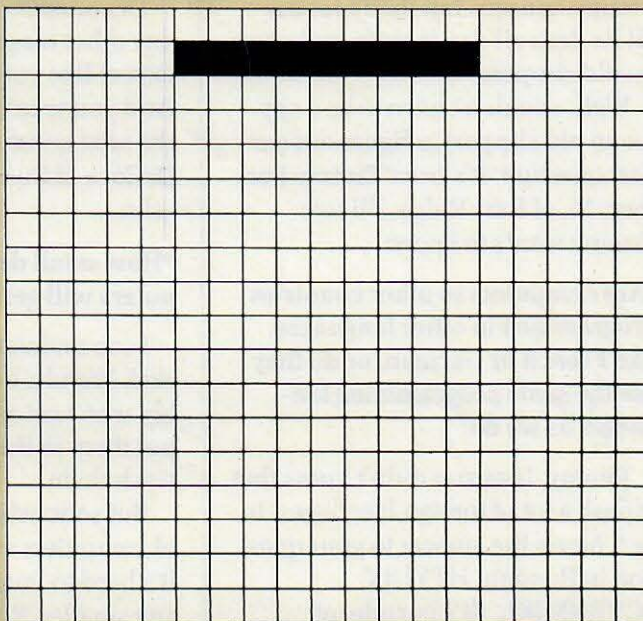
The Suspects: Three famous jewel thieves were seen near the Cornflake mansion the night of the robbery. They are Bobby Burglar, Ralph Robber and Sally Sneak.

The Clues: You can see the computer printout on this page. Next to each row of the graph is some of the computer's code. The numbers tell the computer how to fill in the boxes. The computer only had time to fill in two of the rows before it broke. Using the numbers, the graph and the pictures of the three crooks, can you figure out who stole the Cornflake Crown Jewels?

Answer on Did It! page.

The Numbers:

19
5,9,5
4,11,4
3,12,4
3,13,3
3,3,3,7,3
3,2,9,2,3
3,2,1,3,1,3,1,2,3
4,1,1,2,3,2,1,1,4
1,3,11,3,1
1,3,5,1,5,3,1
1,3,2,1,1,3,1,1,2,3,1
1,3,2,7,2,3,1
1,3,5,1,5,3,1
1,4,9,4,1
1,1,1,1,1,2,5,2,1,1,1,1,1
1,1,1,1,1,1,1,5,1,1,1,1,1,1
1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1



The Slipped Disk Show

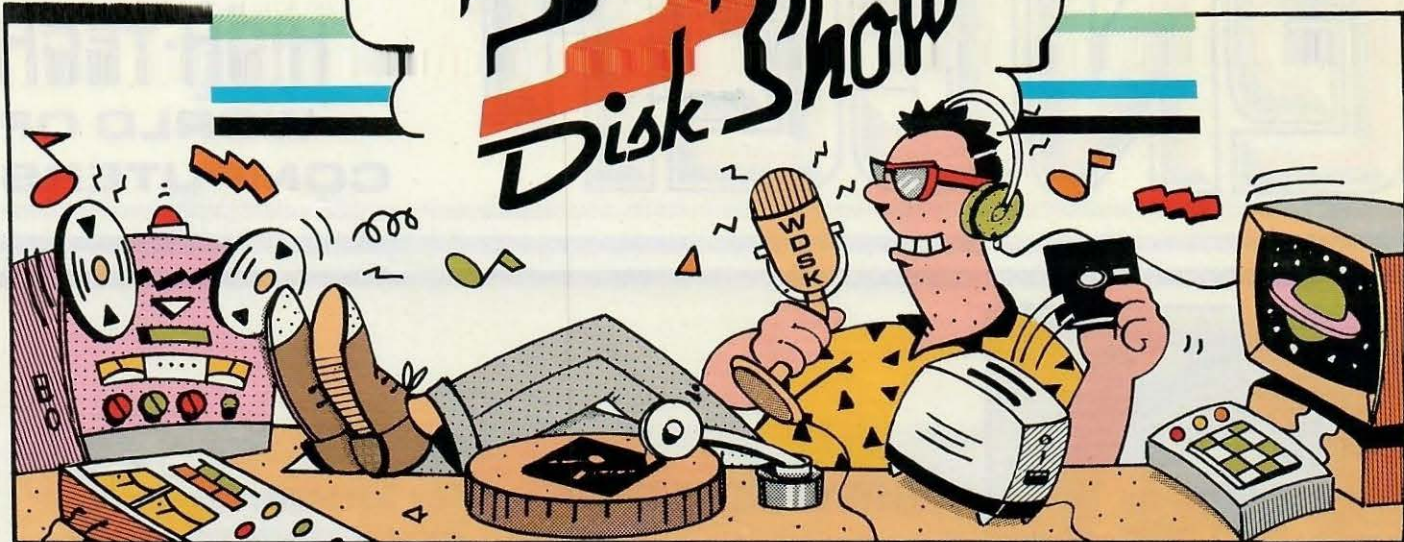


ILLUSTRATION BY CAMERON EAGLE

Hi there all you crazed computer kiddies! Slipped Disk here, the floppy disk jockey, ready to answer your computer questions. This month there's lots of stuff about codes and secret messages in your magazine, so I thought we'd do the show in code. Here goes: BZXDERDF and HHT%\$#\$(!!) Wasn't that fun?

Naturally, as a computer expert, I know all about codes and spy-type stuff. Spies use computers all the time. At least, they do in the movies. Personally, I don't know any spies. Sometimes I think my dog, Floppy, is a spy, but then I realize all he does all day is sleep and chew on old slippers.

Well, you don't have to be a spy (or an old slipper) to figure out our first question. It's from **Tammy Par-lour**, 16, of Burr Ridge, Illinois. Tammy wants to know:

"Are computers in other countries programmed in other languages, like French or German, or do they use the same programming languages as we do?"

Tammy, I bet you didn't know that I speak a lot of foreign languages. In fact, here's the answer to your question in Russian: HTYUIK XCVBNMIKL. (It's in code, of course.)

Now if you want the answer in plain old English, programming languages like BASIC are the same all over the world. Since BASIC and many other computer languages were developed in the United States, lots of programming languages use English words. A Commodore 64 or an IBM computer in Germany isn't any different than one in Arkansas. It uses the same commands like GOTO, PRINT and INPUT. That means you can go to Japan or Mexico or Indonesia, pick up a computer magazine, and be able to read the programs.

Of course, what you won't find in any other magazine is a computer expert like your old pal, Slipped. And you won't find the answer to the next question, from **Wendy DeCoca** of Bussey, Iowa. Wendy asks:

"How small do you think computers will get?"

I can understand why you're worried, Wendy, but computers probably won't get any smaller unless you put them in the dryer after you wash them.

But seriously, the electronic parts of computers are already so small, it's hard to imagine them getting any smaller. Remember, the part of a computer that does the actual add-

ing, subtracting and other computing is a microchip that is smaller than the fingernail of your little finger. So you could say that computers are already very, very small. Computer chips like these are already put into watches, TVs, automobiles and all kinds of other machines.

Of course, when we think of a computer, we usually think of a machine with a keyboard and a display screen. For around \$800 you can buy a lap-sized computer with a keyboard, screen, disk drive and even a tiny printer. That kind of computer weighs less than 10 pounds and will fit inside a briefcase. Pretty small, huh? Even my lunch doesn't weigh less than 10 pounds and fit inside a briefcase!

But one thing that's always too small is the amount of space we have for the show. Remember, I'll be back next month, so if you have any computer questions (or answers) send them to:

The Slipped Disk Show
3-2-1 CONTACT Magazine
1 Lincoln Plaza
New York, NY 10023

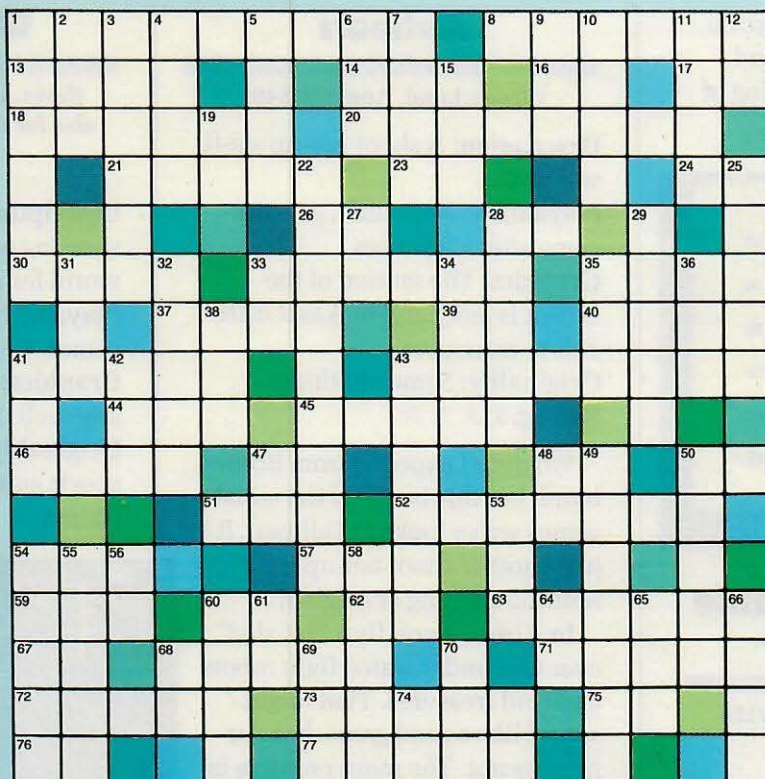
HGTYRU KDDL (*&ERT!

Slipped Disk helps build strong bodies 12 ways.

CROSSWORD PUZZLE

ACROSS

1. A kind of apple
8. A real computer wizard (*Rhymes with cracker*)
13. You _____ a computer file
14. What you do at the dinner table
16. _____ and Pa
17. Throw darts _____ a dart board
18. It has to do with teeth
20. Anything you plug in
21. Musical notes
23. Los Angeles (*abbreviation*)
24. What you say when you laugh
26. He is, you are, I _____
28. GO _____ (*BASIC command*)
30. Long walks make _____ feet
33. What ESC stands for
35. _____, crackle, pop
37. Ditches in a road
39. A large cow
40. A _____ boat
41. What you get when you cry
43. You need a jack to change one
44. Don't stub your _____
45. Niagara _____
46. Soda pop, root _____
47. Either/_____
48. I am, you are, he _____
50. Connecticut (*abbreviation*)
51. Estimated Time of Arrival (*abbreviation*)



52. Lets your computer act like a typewriter
54. Public Broadcasting System (*abbreviation*)
57. You make maple syrup from this
59. A long time
60. Princess _____
62. Homophone for buy
63. An animal that looks like an otter
67. Alan Alda (*initials*)
68. _____ screen
71. Holds down ropes for a tent
72. Farmers grow _____
73. He makes you fall in love
75. Lane (*abbreviation*)
76. Education (*abbreviation*)
77. Looks like a weasel or a marten

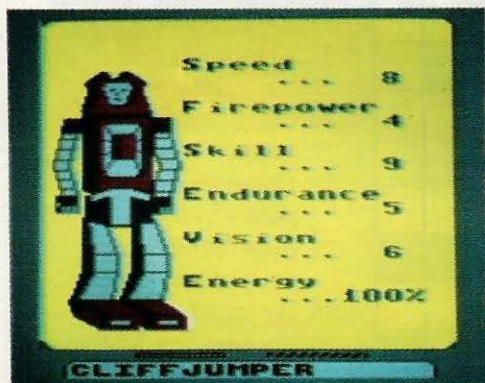
DOWN

1. Sends computer signals over phone lines
2. A gorilla is an _____
3. Floppy disks have a hole in the _____
4. You put a disk _____ a disk drive
5. "Snow White" is a fairy _____
6. You use your eyes to _____
7. A _____ way
9. Amount (*abbreviation*)
10. A fish that rhymes with harp
11. Every one
12. Route (*abbreviation*)
15. Coffee or _____?
19. Would you like a pear or _____ apple?
22. A flavoring from the bark of a type of bush
25. The original home computer
27. Master of Ceremonies (*abbreviation*)
28. _____ Instruments (*Computer maker*)
29. As slow as a _____
31. Less than two
32. Computers give _____ messages
33. "_____, phone home."
34. Homophone for pole
35. SuperSonic Transport (*abbreviation*)
36. We breathe this
38. Hackers _____ computers
41. A diet cola
42. I'm not hungry, I just _____
43. A _____ disk
47. Over time (*abbreviation*)
48. Opposite of out
49. Shock
50. A small stream
53. International Business Machines (*abbreviation*)
54. "_____ on earth"
55. Key-_____
56. Saturday Night (*abbreviation*)
58. When you turn around, you do an _____ face
60. A floppy _____
61. Identification (*abbreviation*)
64. Slow _____ a snail
65. Sun _____
66. Opposite of far
68. Vice President (*abbreviation*)
69. Economics (*abbreviation*)
70. You wear a bow _____
74. Part Time (*abbreviation*)

REVIEWS

by Phil Wiswell and Bill Gillette

All software is rated on a scale of one to 10, based on Phil and Bill's overall reaction. A rating of 10 is the very best.



Transformers—Battle to Save Earth

(Activision, Commodore 64/128, \$34.95)

Description: Based on the TV characters, this is a combination strategy and action game.

Playability: Keeps your interest. Best for Transformers fans.

Graphics: Wonderful!

Originality: Nothing new, but it's still fun.

Rating: 7 ★★★★★★

Transformers pits the evil Decepticon robots against eight Autobots. The Decepticons try to drain Earth's energy supply while you try to stop them with the Autobots. You must monitor the map on your screen and move the Autobots from one position to another as the Decepticons shift their forces.

At any time, you can view the action through the eyes of one of your Autobots. The strategy in this game is to juggle your forces to fight the shifting enemy.

Airheart

(Broderbund, Apple II, \$40)

Description: A shoot-em-up sci-fi war game.

Playability: Not much, gets tiresome after a few tries.

Graphics: The motion of the screen is jerky and makes it difficult to maneuver.

Originality: Same old thing.

Rating: 3 ★★☆☆

We didn't expect it from Broderbund, but this is one of the worst games we've looked at all year. It's just another shoot-em-up with nothing exciting or original.

In *Airheart* you fly a "jet-sled" over and under water, fight robots and find treasures. That might sound like a good game, but *Airheart* is not. The main problem is that flying the jet-sled is very hard, if not impossible.

The rules don't really explain the game well enough, either. It's easy to figure out what to do with the seven different kinds of enemies—you blast them. But we couldn't figure out how to find any treasure and get home with it. This game is so hard that, after a while, we didn't care about winning—or playing.



World Games

(Epyx, Commodore 64/128, \$35; also for the Apple II, IBM, Amiga, Atari ST)

Description: A series of eight sporting events from around the world for one to eight players.

Playability: Lots of variety in the games. Great for group play.

Graphics: Lots of detail and generally well done.

Originality: Similar to other Epyx sports games.

Rating: 7 ★★★★★★



One of the best things about this game is that up to eight players can play, and it's fun even if you just watch. The eight events are from eight different countries: cliff diving from Mexico, log rolling from Canada, sumo wrestling from Japan, etc. As you move from country to country you are treated to text describing the next event.

All events are controlled with the joystick, though different moves are required for each. Barrel jumping, from Germany, was one of our favorites. Some games were a little boring, such as weightlifting, but others, such as log rolling and bull riding, keep things moving.



Countries and Continents

(CBS Software, Apple II, \$39.95)

Description: A lesson on world geography in four game-like activities.

Playability: Difficult to learn, and slightly boring to play.

Graphics: Okay, for an educational program.

Originality: A good idea, but not done well.

Rating: 5 ★★★★★

We had high hopes for this program, but we were disappointed. We know this is supposed to be educational, but that doesn't mean it has to be dull.

One of the games, "Nation Combination," was fun and made you think. Two players are dealt "hands" of five countries each. Other countries are displayed on the screen and you must try to match it with the one in your hand by finding a country with the same language, continent, etc.

"Flag Frenzy," another game, had a little more action. You score points for identifying flags of different nations as you move a flag-pole sitter back and forth among five flagpoles. The fourth activity isn't a game at all, but a database with information on over 140 countries. You can learn a lot by using it.

Robot Rascals

(Electronic Arts, Commodore 64, \$40; also for the Apple II)

Description: A cross between a computer game, a scavenger hunt, a board game and a card game.

Playability: Easy to learn, and keeps you interested.

Graphics: The animated playing pieces are great.

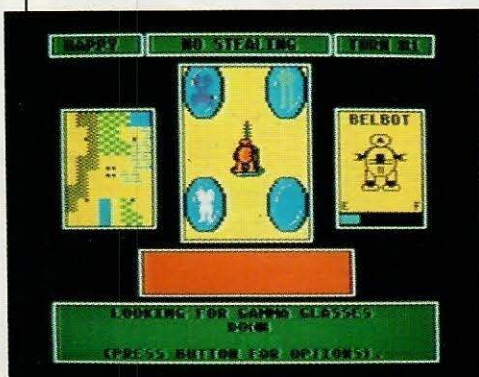
Originality: A very neat idea.

Rating: 8 ★★★★★★

This scavenger hunt pits two to four players against each other in a race to find hidden objects. The items are hidden somewhere on the "board," which is your computer screen. Each player is dealt cards at the beginning of the game that show the objects he or she must find. Since the objects are hidden in a different spot each time you play, no two games are the same.

Your playing piece is an animated robot which you move around the screen with a joystick. Each robot moves differently, and watching them is part of the fun. The robots have "scanners" which help you locate items. As you move around, you have to watch out for fences, lakes, trees and other natural hazards.

What really makes this game fun is playing it with other people. We love multi-player games like this and want to see more of them.



Toy Shop

(Broderbund, Macintosh and IBM, \$64.95; also for Apple II and

Commodore 64/128, \$59.95)

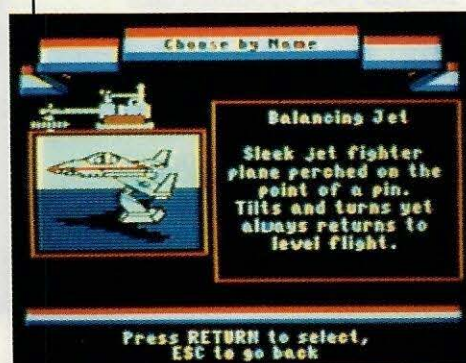
Description: Lets you print out and put together 20 different paper models of toys with moving parts.

Playability: A lot of fun, but takes some work.

Graphics: On the Macintosh, they were superb.

Originality: This is a brand new activity for the home computer.

Rating: 8 ★★★★★★



With this program you can create beautiful three-dimensional paper models without being an artist or an engineer.

The 20 toys you can make include a steam engine, a carousel and a spaceship. You select the model you want to create, and decorate it with designs, text, or your own drawings. When you're ready, you print the model on a piece of the special cardboard included with the disk. Then you cut out the pieces of the model and glue them together.

We thought this was a great program and the models don't just look good—they actually work! For example, the Helicopter actually flies!

Phil Wiswell, father of three, is a computer consultant and writer. Bill Gillette, 16, is a student with a passion for computers.

basic TRAINING

PROGRAMS FOR YOUR COMPUTER

What Did You Say?

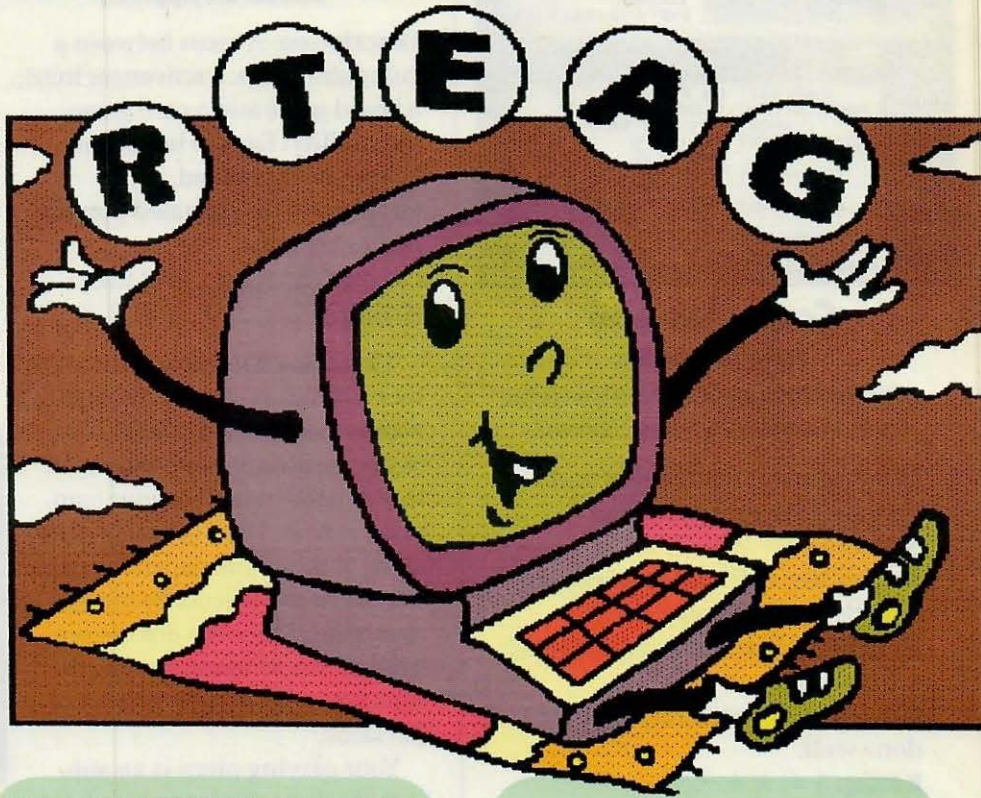
A Word Jumble Game

What does RTEAG spell? You'll have to figure it out if you want to win this word jumble game. You play it with a friend and a computer, and we think it's GREAT!

You and your opponent take turns typing in words that are less than 10 letters long. While one player types, the second player closes his or her eyes. Press RETURN or ENTER and the computer will jumble the letters. Then the second player has four chances to guess the original word. If you get it right, you get one point for every letter in the word. If you don't guess it, then your opponent gets the points. The first player to score 30 points wins the game.

This program was adapted from one sent in by **Brian Gillingham**, 17, of New Alexandria, Pennsylvania. KHNATS A LTO, Brian for this DOWRENLUF game.

ILLUSTRATIONS BY MARTIN LEWELMAN



TI 99/4A

```

5  DIM P$(2)
10  DIM WW$(10)
20  CALL CLEAR
30  FOR P=1 TO 2
40  PRINT "INPUT PLAYER #";P;"
    'S NAME'"
50  INPUT P$(P)
60  NEXT P
70  REM GAME LOOP
80  CALL CLEAR
90  PRINT "SCORE:"
100 PRINT P$(1);"—";S(1), P$(2);
    "—";S(2)
110 P=P+1
112 IF P<3 THEN 120
115 P=1

```

```

120 PRINT "IT'S" ;P$(P); " 'S TURN"
130 D=2
140 IF P+1 <3 THEN 150
145 D=1
150 PRINT P$(D); " CLOSE YOUR
    EYES"
160 PRINT
170 PRINT P$(P); "ENTER YOUR
    WORD"
180 INPUT W$
190 IF LEN(W$) > 10 THEN 170
200 W2$=" "
210 FOR I=0 TO 10
220 WW$(I)=" "
221 NEXT I
230 CALL CLEAR
240 PRINT
245 PRINT
250 X=LEN(W$)
260 FOR I=1 TO X
270 Y=INT (RND*X)+1
280 IF WW$(Y)="-" THEN 270
290 WW$(Y)="-"
300 W1$=SEG$(W$,Y,1)
310 W2$=W2$&W1$
320 PRINT W1$;
330 CALL SOUND (100,294,2)
340 FOR B=1 TO 300
345 NEXT B
350 NEXT I

```

```

360 CALL CLEAR
365 G=1
370 PRINT P$(D); " YOU HAVE
    4 GUESSES"
380 REM GUESS LOOP
390 PRINT
395 PRINT W2$
400 PRINT "GUESS #";G
410 INPUT G$
420 IF G$=W$ THEN 460
430 G=G+1
440 IF G > 4 THEN 500
450 GOTO 380
460 PRINT "RIGHT!"
470 S(D)=S(D) + LEN (W$)
480 IF S(D) > 29 THEN 550
490 GOTO 530
500 PRINT "WRONG!" THE WORD
    WAS:";W$
510 S(P)=S(P) = LEN(W$)
520 IF S(P) < 30 THEN 530
521 D=P
525 GOTO 550
530 FOR B=1 TO 500
535 NEXT B
540 GOTO 70
550 CALL CLEAR
560 PRINT P$(D); " WON!!!"
570 PRINT "GAME OVER"

```


Atari

```

10 P = 2
20 DIM W$(20), G$(10)
30 DIM W1$(10), S(2), W(10)
40 FOR I=1 TO 2
50 S(I)=0: NEXT I
60 REM GAME LOOP
70 FOR I=1 TO 10
80 W(I)=0: NEXT I
90 PRINT CHR$(125)
100 PRINT "SCORE:"
110 PRINT "PLAYER 1: "; S(1)
120 PRINT "PLAYER 2: "; S(2)
130 P=P+1: IF P>2 THEN P=1
140 PRINT "PLAYER #"; P; "S
    TURN"
150 D=2
160 IF P+1=3 THEN D=1
170 PRINT "PLAYER #"; D; "CLOSE
    YOUR EYES"
180 PRINT
190 PRINT "PLAYER #"; P; "ENTER
    YOUR WORD"
200 INPUT W$
210 IF LEN(W$)>10 THEN 180
220 PRINT CHR$(125)
230 W1$=" ": X=LEN(W$)
240 FOR I=1 TO X
250 Y=INT(RND(0)*X)+1
260 IF W(Y)=1 THEN 250
270 W(Y)=1: W1$(I,I)=W$(Y,Y)
280 SOUND 0,40,12,15
290 FOR B=1 TO 250: NEXT B
300 PRINT W1$(I,I);
310 SOUND 0,0,0,0
320 FOR B=1 TO 200: NEXT B
330 NEXT I
340 PRINT CHR$(125): G=1
350 PRINT "PLAYER"; D; "YOU
    HAVE 4 GUESSES."
360 REM GUESS LOOP
370 PRINT : PRINT W1$
380 PRINT "GUESS #"; G
390 INPUT G$
400 IF G$=W$ THEN 440
410 G=G+1
420 IF G>4 THEN 480
430 GOTO 360
440 PRINT "RIGHT!"
450 S(D)=S(D)+LEN(W$)
460 IF S(D)>29 THEN 530
470 GOTO 510
480 PRINT "WRONG! THE WORD
    WAS: "; W$
490 S(P)=S(P)+LEN(W$)
500 IF S(P)>29 THEN D=P: GOTO
    530
510 FOR B=1 TO 1000: NEXT B
520 GOTO 60
530 PRINT CHR$(125)
540 PRINT "PLAYER #"; D; "WON!!"
550 PRINT "GAME OVER"

```

Apple

```

10 DIM P$(2), WW$(10), S(2)
20 HOME
30 FOR P = 1 TO 2
40 PRINT "INPUT PLAYER #"; P;
    "S NAME"
50 INPUT P$(P)
60 NEXT P
70 REM GAME LOOP
80 HOME
90 PRINT "SCORE:"
100 PRINT P$(1); "—"; S(1), P$(2);
    "—"; S(2)
110 P = P + 1: IF P > 2 THEN P = 1
120 PRINT "IT'S"; P$(P); "S TURN"
130 D = 2
140 IF P + 1 = 3 THEN D = 1
150 PRINT P$(D); "CLOSE YOUR
    EYES"
160 PRINT
170 PRINT P$(P); "ENTER YOUR
    WORD"
180 INPUT W$
190 IF LEN(W$) > 10 THEN 170
200 W2$ = ""
210 FOR I = 0 TO 10
220 WW$(I) = " ": NEXT I
230 HOME
240 PRINT : PRINT
250 X = LEN(W$)
260 FOR I = 1 TO X
270 Y = INT(RND(1)*X) + 1
280 IF WW$(Y) = "—" THEN 270
290 WW$(Y) = "—"
300 W1$ = MID$(W$, Y, 1)
310 W2$ = W2$ + W1$
320 PRINT W1$;
330 PRINT CHR$(7);
340 FOR B = 1 TO 1000: NEXT B
350 NEXT I
360 HOME : G = 1
370 PRINT P$(D); "YOU HAVE 4
    GUESSES."
380 REM GUESS LOOP
390 PRINT : PRINT W2$

```

```

400 PRINT "GUESS #"; G
410 INPUT G$
420 IF G$ = W$ THEN 460
430 G = G + 1
440 IF G > 4 THEN 500
450 GOTO 380
460 PRINT "RIGHT!"
470 S(D) = S(D) + LEN(W$)
480 IF S(D) > 29 THEN 550
490 GOTO 530
500 PRINT "WRONG! THE WORD
    WAS: "; W$
510 S(P) = S(P) + LEN(W$)
520 IF S(P) > 29 THEN D = P: GOTO
    550
530 FOR B = 1 TO 1000: NEXT B
540 GOTO 70
550 HOME
560 PRINT P$(D); "WON!!"
570 PRINT "GAME OVER"

```

IDM

Use the Apple program, change all HOME statements to CLS. Change line 330 to: 330 BEEP

Commodore 64/128

Use the Apple program; change all HOME statements to PRINT CHR\$(147). Delete line 330.

Send Us Your Programs

If you've written a program you'd like us to print, send it in. Include a note telling us your name, address, age, T-shirt size and type of computer. If we like it, we'll print it and send you \$25.

All programs must be your own original work. We cannot return programs. Please do not send disks. Send your program to:

Basic Training
3-2-1 CONTACT Magazine
1 Lincoln Plaza
New York, N.Y. 10023



Any Questions?

Do fish sleep and, if so, do they close their eyes?

All fish need rest, just as you do. Different kinds of fish have different ways of taking a snooze. Some fish sleep on the ocean or lake bottom, resting on their bellies. Others burrow into the sand. Still others float in the water.

But even though fish sleep, they never close their eyes. You could stand in front of a fish tank for hours and never see a fish blink. Is it sleeping or not? You'd never know for sure. Fish don't close their eyes because they can't. They have no eyelids!

So how can a fish fall asleep if it can't close its eyes? A fish's brain shuts out light and allows it to sleep. This is something like what happens to you when you are asleep—not to your eyes, but to your ears. Your ears stay open as you snooze, but your brain shuts out most of the noise.

Question sent in by Melodie Smith, Catoosa, OK.



Why do teenagers get so many pimples?

In a few short years you'll be reaching your teens. You will grow taller and your body will mature. That's good! You will also be faced with the problem of acne. That's bad!

Most of the changes your body will go through are caused by *hormones*. These chemicals are made inside you. They send signals to different parts of your body and help control what these body parts do.

Hormones control the glands in your skin. These glands release oil which keeps your skin smooth and soft. Hormones in teenagers are very active. They may send too many signals to these glands. The glands give off too much oil. The oil helps block the tiny openings in your skin. The result? Zits!

There is not a whole lot you can do about this. Keeping your face clean will help. But mainly you have to wait until you are older. As the hormone activity slows down, your skin clears up.

Question sent in by Christa Storey, New York, NY.

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

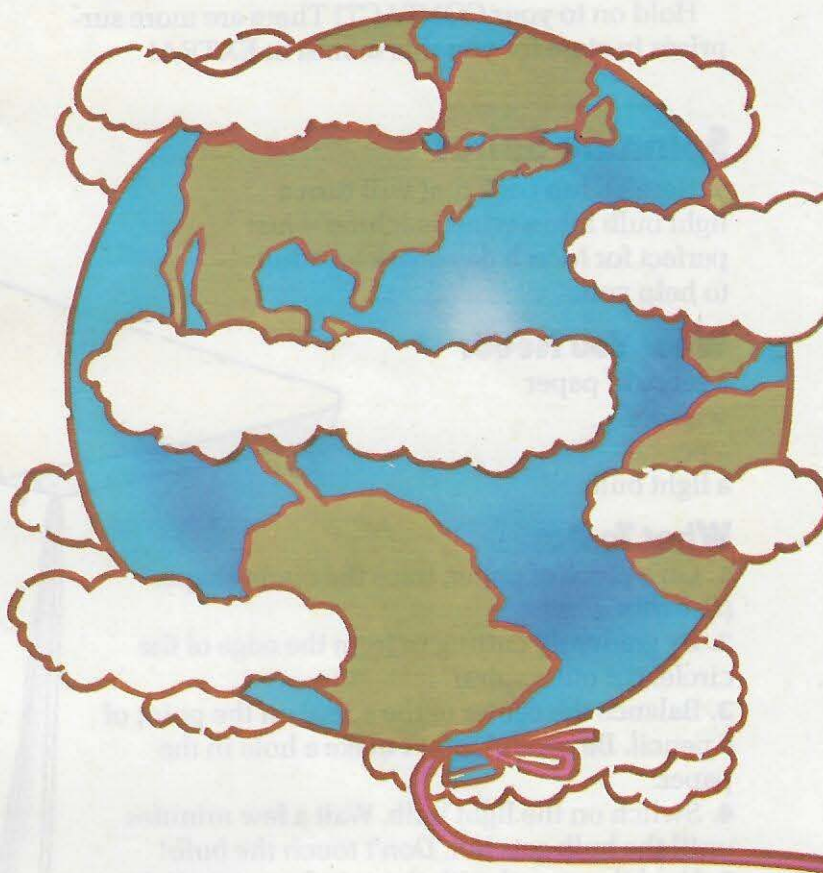
How does the earth get its atmosphere? Take a deep breath. Big deal, right? It's only air. But what air! That special mix of gases is what makes life possible on earth.

The earth's atmosphere is a mixture of gases that formed after the earth did. Billions of years ago, the earth was very, very hot. The inside was all melted rock. From this melted rock, chemicals rose to the surface. Some of the chemicals combined to form water. Others kept rising. These became the atmosphere.

At first, there was little oxygen in the atmosphere. Over many millions of years, the amount of oxygen in the air increased.

Today, the earth's atmosphere is made of several gases. It's mostly nitrogen gas. But there's also oxygen, carbon dioxide and argon gas. Because of the pull of earth's gravity, these gases stay put, like a shell surrounding the earth.

Question sent in by Alex Tsotsos, Palm Harbor, FL.



What is the moon made of?

In 1969 people got the chance to find out for sure. Astronauts landed on the moon for the first time. They brought back samples of rocks and soil from the moon's surface.

By studying these different samples, people soon discovered what the moon is made of. The rocks and dirt on the moon are made of almost the same minerals as the rocks and dirt on earth.

There are two main kinds of rocks on the moon. One was formed by crashing meteorites. The other kind is made of tightly-packed moon soil.

In some places, moon soil, which looks like gray dust, is one mile deep. But, even though there is soil there, nothing grows on the moon because there is no water. Oh yes, one other thing the moon doesn't have—green cheese!

Question sent in by Lance Davis, Pueblo, CO.

ILLUSTRATIONS © DENNIS ZIEMIENSKI

Extra!

Hold on to your CONTACT! There are more surprises in store for you this month in EXTRA!

Spinning Spiral

Here's a fun trick that will turn a light bulb into a wind machine—just perfect for March days! Ask an adult to help you.

What You Need:

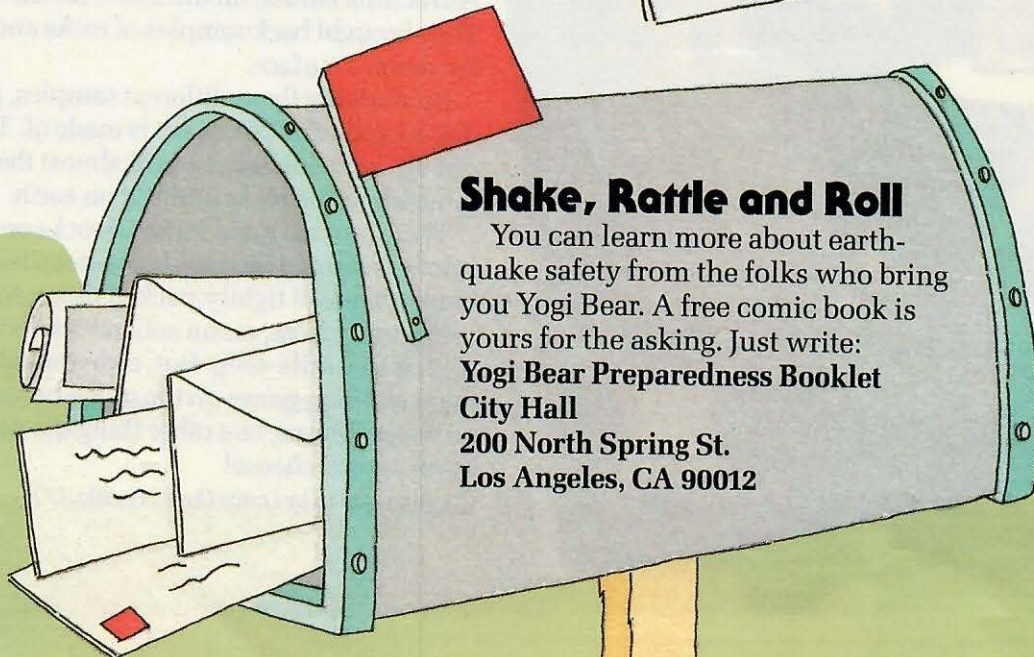
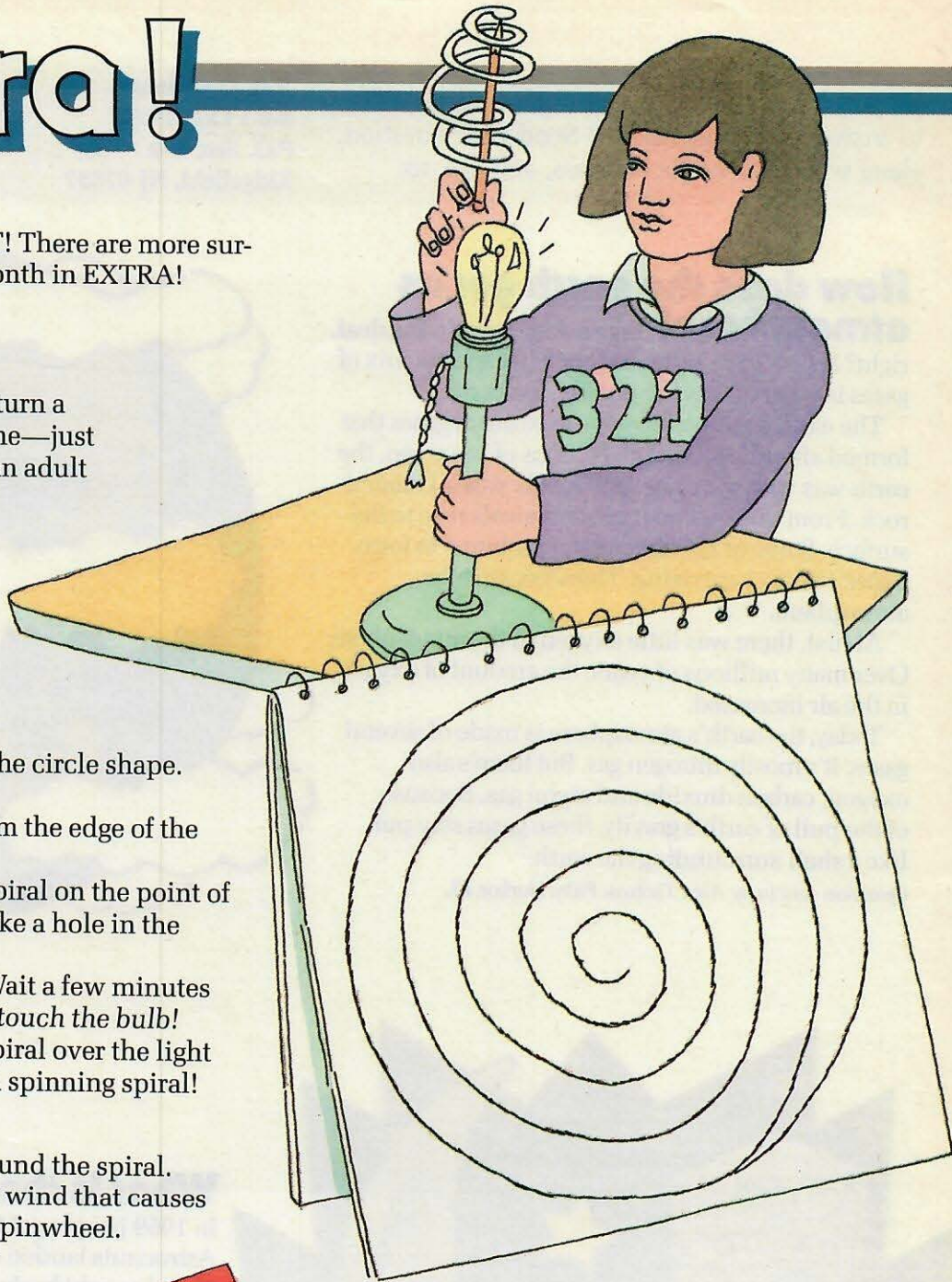
a piece of paper
scissors
a pencil
a light bulb

What To Do:

1. On a piece of paper, trace the circle shape. (See drawing.)
2. By gradually cutting in from the edge of the circle, cut out a spiral.
3. Balance the center of the spiral on the point of a pencil. Be careful, don't make a hole in the paper.
4. Switch on the light bulb. Wait a few minutes until the bulb gets hot. *Don't touch the bulb!*
5. Hold the pencil with the spiral over the light bulb. What have you got?—A spinning spiral!

Why It Works:

The bulb warms the air around the spiral. These warm currents create a wind that causes the spiral to spin—just like a pinwheel.



Shake, Rattle and Roll

You can learn more about earthquake safety from the folks who bring you Yogi Bear. A free comic book is yours for the asking. Just write:
Yogi Bear Preparedness Booklet
City Hall
200 North Spring St.
Los Angeles, CA 90012

Egg-citement

Scientists are working to make buildings stronger and safer in earthquakes. This experiment will prove how the dome shape of eggs makes them tougher than you think!

What You Need:

4 raw eggs a bunch of books—
scissors all about the same size
masking tape

What To Do:

1. Gently break open the *small* end of each egg by tapping it on a table or counter. Very carefully peel away some of the eggshell.
2. Pour out the egg.
3. Put a piece of masking tape around the middle of each eggshell. (This keeps the eggshell from cracking when it's cut.)
4. Cut through the strip of masking tape. When you're done, you should have four half-eggshells. The edges should be smooth and even.
5. Put the eggshells, open end down on a table or floor. The shells should be in the shape of a rectangle. The rectangle should be slightly smaller than the size of your books.
6. Place one of the books on the eggshells. Keep adding books until the eggs crack.

How many books did you stack before the eggshells cracked? Try weighing the books to see how much weight the eggshells held.



ILLUSTRATIONS BY MICHAEL DONATO

Why It Works:

The eggshells you used are shaped like miniature domes. Domes are very strong shapes. No single spot on a dome supports the whole weight of an object. So architects use domes on large buildings like ice rinks and sports arenas.

Readers' Riddles

In September's EXTRA! we asked you to send us your funniest riddles and jokes. Here are some that really tickled our funny bone. The answers are on the Did It! page.

1

What animal can never be trusted?

Amy Scott, Ypsilanti, Michigan

2

What would this country be called if everyone drove a pink car?

Michael McIntyre, Perry, Florida

3

What will the Bionic Woman's baby have lots of?

Christy Herwig, Randolph, Vermont

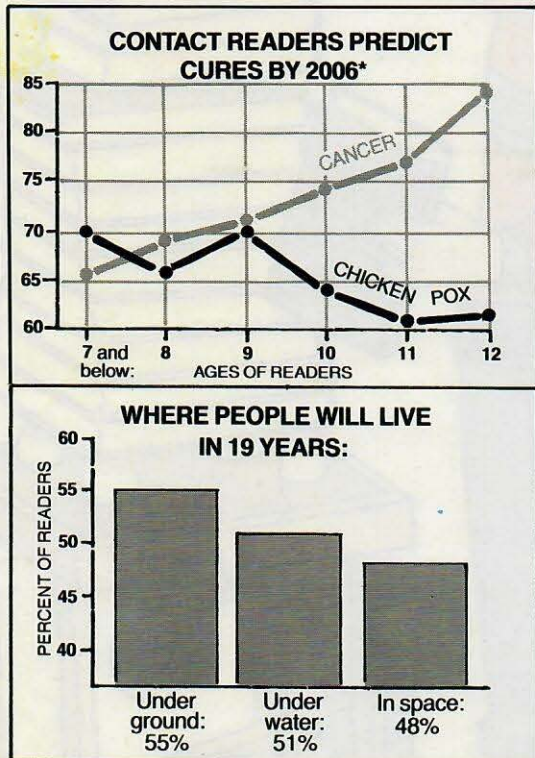
4

Why does Saturn have rings around it?

Heather Roberts, Tullahoma, Tennessee

Did It!

Picture This!



Readers' Riddles

1. A cheetah, 2. A pink carnation, 3. Supervision,
4. Because there was no comet to scrub them away

Cover Maze

Did you notice the shopping mall, amusement park, baseball stadium, swimming pool and, of course, the alien creature?

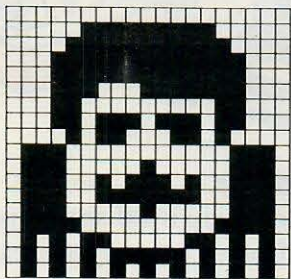


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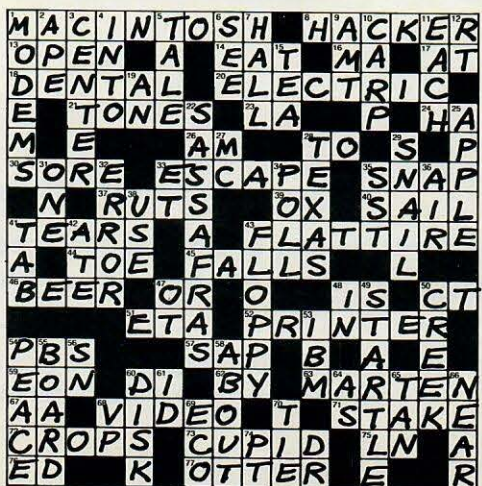
Micro Mystery

Answer:

Bobby Burglar



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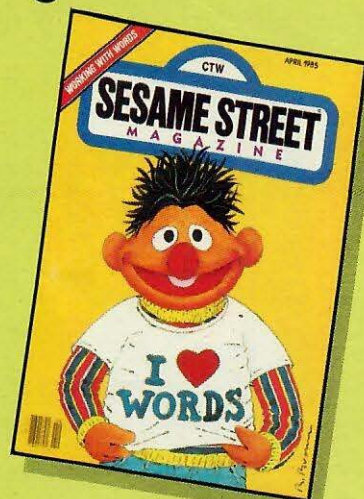
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LEARNING IS FUN ...

Sesame Street Magazine

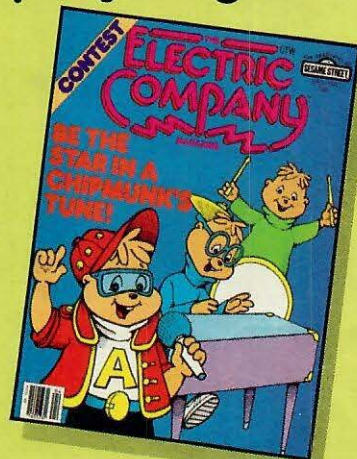
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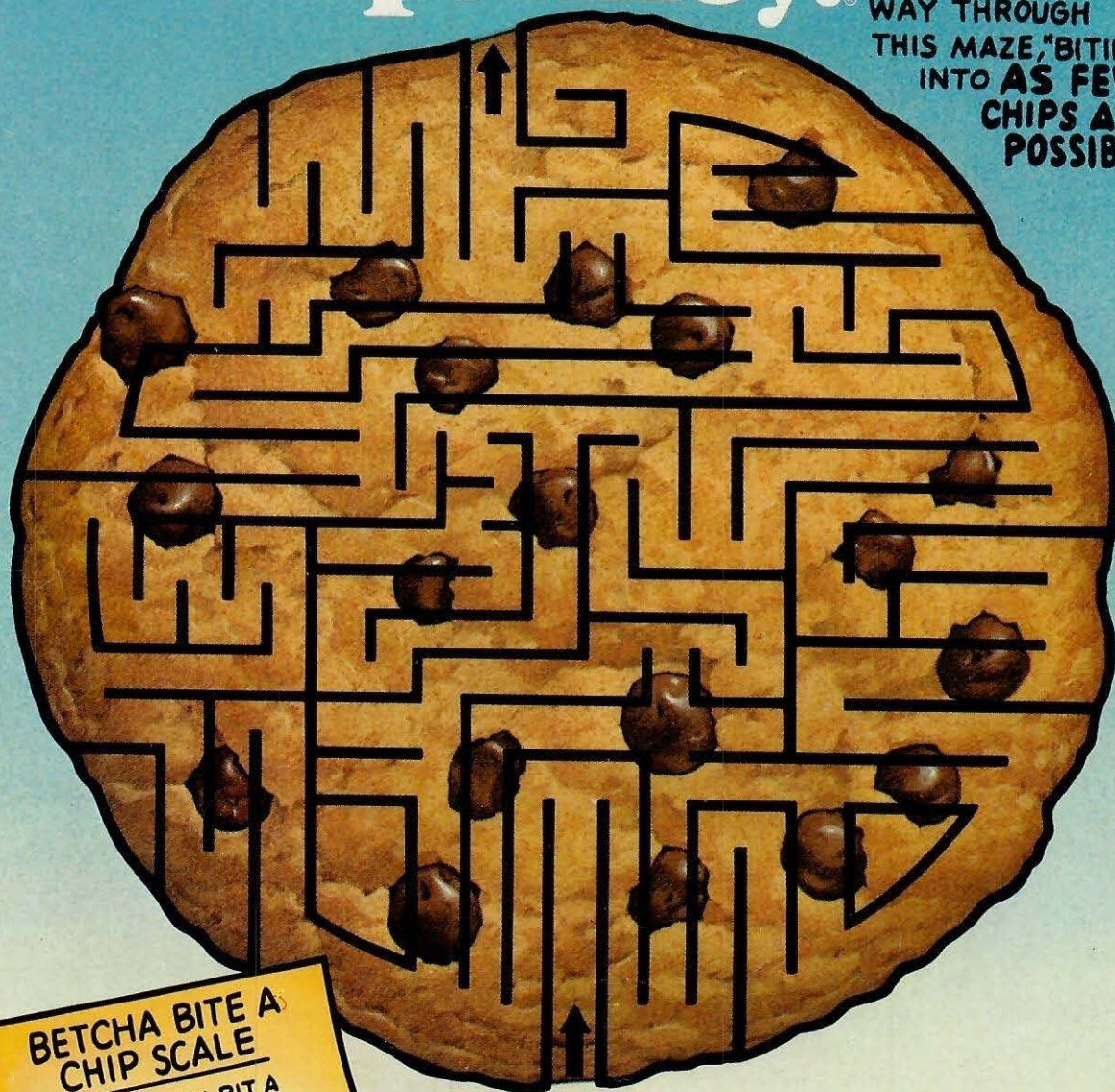
THE CTW
ELECTRIC
COMPANY
MAGAZINE

3-2-1 **CONTACT**

BETCHA BITE A CHIP

with
Chips Ahoy!

THERE ARE SO MANY CHOCOLATE CHIPS IN A CHIPS AHOY! COOKIE, IT'S IMPOSSIBLE TO BITE A COOKIE WITHOUT BITING A CHIP. SEE IF YOU CAN "EAT" YOUR WAY THROUGH THIS MAZE, "BITING" INTO AS FEW CHIPS AS POSSIBLE.



BETCHA BITE A CHIP SCALE

- 5 OR MORE - YOU BIT A MOUTHFUL (TRY AGAIN)
- 4 CHIPS - CHOCOLATE MUNCHER
- 3 CHIPS - NOT A BAD BIT O' BITING, BUDDY
- 2 CHIPS - CHOOSY CHEWER
- 1 CHIP - CHIP SKIPPER (IMPOSSIBLE!)
- 0 CHIPS - IMPOSSIBLE! (WE TOLD YOU)

